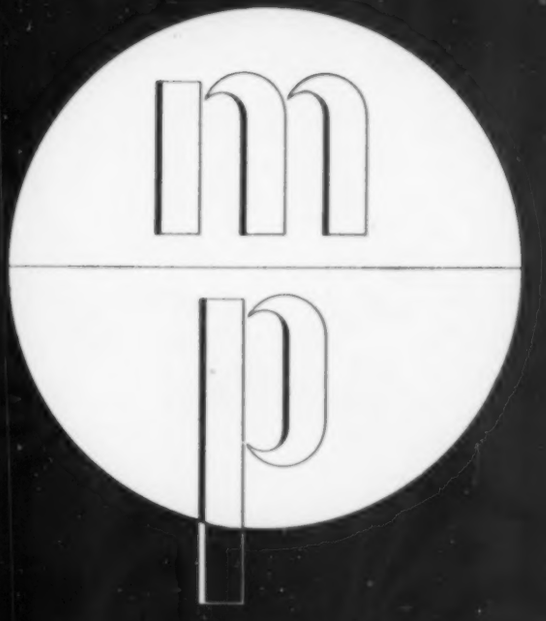
MODERN PLASTICS



AUGUST 1935

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★ LIGHTER WEIGHT ★ SIMPLIFIED PRODUCTION

★ COOLER OPERATION ★ NEED NO FINISHING

1 SMOOTH, SLEEK AND GRACEFUL! The entire case of the attractive Syncro-Invigorator is molded of Durez. Because of its smooth, lustrous Durez finish and good design, the device is quite at home on any well-appointed dressing table . . . and it will *keep* its beauty as long as the appliance is in use. Many production operations are eliminated because the final finish is produced right in the molding operation. Designed by Henry J. King, molded by August F. Markus Eng. & Mfg. Co.

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3 GARAGE FLOORS CAN'T FAZE IT! Skilsaw, Inc., considers the Durez housing one of the best features of this new electric hand grinder. The housing is light, compact, yet immensely strong. Durez — being a non-conductor of heat and electricity, prevents the 18,000 R.P.M. motor from making the tool too hot to handle, and makes other insulation of electrical connections unnecessary . . . they're imbedded right in the case. The smooth, shiny Durez finish is permanent — it won't chip, dull, dent, or crack. Production is simplified because inserts, mountings and final finish are produced right in the molding operation.

SEVERAL years ago, all electrical appliances had metal cases . . . *today* manufacturer after manufacturer is changing to Durez. Why? Because they have found that a Durez case not only improves their product considerably, but also *simplifies their production*. No matter what type of appliance you make, you should be familiar with Durez. We'd be glad to give you more complete information and put our test laboratories at your disposal. Just write, General Plastics, Inc., 358 Walck Road, North Tonawanda, N. Y.

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D U R E Z

THE MODERN MOLDING COMPOUND

MODERN PLASTICS

E. F. LOUGEE, EDITOR

D. E. A. CHARLTON, EDITORIAL DIRECTOR

AUGUST, 1935 VOLUME 12 NUMBER 12

• OF GENERAL INTEREST

Refrigerators are no longer cool to plastics..... 11
By W. N. Shepard
Plastics back stage..... 14
By A. B. Laing
Telling customers how..... 17
Molding removes objections—lowers cost..... 18
By E. F. Lougee
Opportunity in housewares..... 22
If we were giving medals..... 25
A good plastic won't down..... 26
By Herbert E. Chase, M.E.
The Airflow Safefan is molded..... 28
London cocktails in the American manner..... 31
By Ruth Lampland
Design-molding for physicians..... 33
Redesign zooms sales..... 39
By N. S. Stoddard

• TECHNICALLY INCLINED

Machining cast resins..... 20
Dangers eliminated in high cycle, polarized service..... 29

• NEWS AND FEATURES

Editorial comment..... 24
New things this month..... 36
New ideas..... 40
Keeping posted..... 41
Literature..... 46
New Machinery..... 50

H. D. BENNETT

NEXT MONTH

Hugh D. Bennett, President of the Toledo Scale Co., will tell the interesting story of the new Toledo Scale whose housing is the largest urea molding ever made in this country, weighing more than nine pounds. Mr. Bennett's rapid rise from the ranks of automobile salesmen to president of Toledo Scale Co., indicates the nature of the man whose initiative pioneered this huge molding and in doing so caused the creation of a press of undreamed of dimensions in plastic molding. The story of the press will appear in a later issue.

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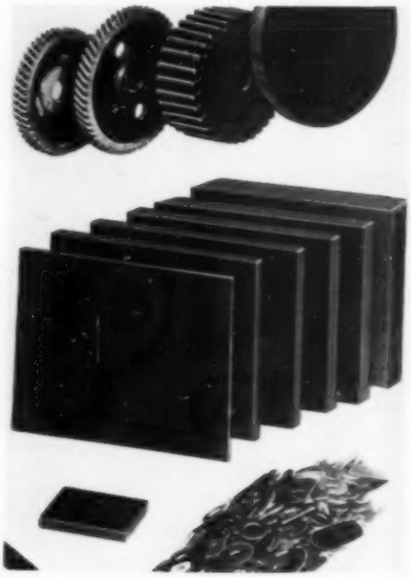

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AUGUST 1935

MODERN PLASTICS

BRESKIN AND CHARLTON PUBLISHING CORP.

VOL. 12 No. 12

Refrigerators are no longer cool to plastics

by W. N. Shepard

TOLEDO SYNTHETIC PRODUCTS INC., MAKERS OF PLASKON

THE use of plastics in the refrigerator industry has increased tremendously in the past few years, until today it is no exaggeration to say that in or on every refrigerator, electric, gas, or ice, there is one or more plastic parts. The large quantities of synthetic resins thus consumed form an appreciable part of the total production of plastics each year.

The physical characteristics of laminated and molded phenolics and ureas are especially adapted to the refrigerator. Low heat conductivity, stable colors and surfaces, high resistance to moisture and continued low temperatures, coupled with low cost have gone far toward convincing refrigerator manufacturers that they should take full advantage of modern plastics. New applications are developed each year, and as a result of intelligent engineering, in almost every instance the new plastic parts have proved to be satisfactory.

So much has been said on these pages of the general characteristics of plastics that further generalizations are unnecessary. The continued use of the plastic parts mentioned below bears witness to the fact that nothing is more satisfactory when physical properties and costs are considered.

One of the earliest uses of plastics in the refrigerator field came with the development of laminated phenolic breaker strips for doors. These strips have proved to be one of the most satisfactory applications for plastics yet developed, and they are almost universally used today. The sleek and glossy appearance of these strips, together with their low heat conductivity and mechanical strength, make them a "natural."

It is in the molded field, however, that the total tonnage consumed has increased so amazingly each year. The uses are legion, from one to five pounds of molded compound going into each refrigerator.

On opening a refrigerator door, the chances are good that one will grasp a plastic handle. These are of many types. Urea or phenolic strip inserts set in a stamped metal handle are used either purely for decorative purposes or functionally as a lock release in the drop latch type of handle. White and black are by far the most popular colors, but green and brown were also tried out with some success this past year on colored refrigerators. In addition to this type of handle, a square plastic shell about $^1/_{16}$ inch thick, slipped over a diecasting and locked into place, has proved both sturdy and attractive.

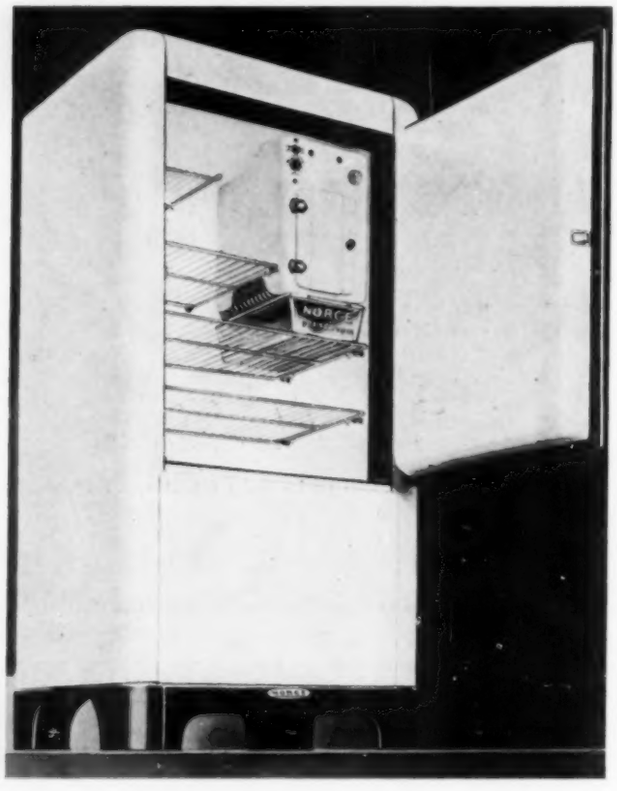
The escutcheon through which the end or ends of the door handle slip, is molded of the same material as the insert, making for pleasing color harmony.

Above the handle, usually on the cabinet itself, the name of the refrigerator is often shown on a molded

plaque, with letters wiped in. If the plaque is molded of white urea, a black pigment would be wiped in. Conversely, if a black compound is used, the letters would stand out in contrasting white.

Taking a hint from the automotive industry, manufacturers buy latch bolts molded of canvas filled phenolic material or of graphite compound which of course provides its own lubrication. No other material has proved to be as satisfactory in use.

Plastic breaker strips insure a perfect "seal." They are clearly shown in this Norge refrigerator designed by Lurelle Guild



Inside the refrigerator, shelves rest on studs of molded white urea of a shade to match the porcelain enamel parts. These studs are completely tasteless and odorless, and all danger of odious tainting is eliminated. This accounts to some extent for the sudden exit of rubber studs in favor of molded. One refrigerator manufacturer has gone further and placed the shelves on molded rollers, facilitating the removal of food.

Evaporator door knobs, temperature control knobs, and switches are pleasant to the touch, because of excellent dielectric properties. The baffle door button is frequently molded, as are indeed, most knobs and controls, which are more satisfactory than those turned out of metal because they cannot become "cold" or transmit electric current.

An interesting application of plastics is illustrated in the use of white or black molded tips on the top and bottom of the refrigerator door hinge pin. They serve no functional purpose but render pleasing an otherwise ugly mechanical part by imparting a stream-lined effect to the entire unit.

In the mechanism of the electric refrigerator the excellent insulating properties of molded phenolic compound are used to advantage. Such small pieces as the terminal insulating cap on the compressor unit and insulating sleeves are molded because no other material can offer the same properties even at a higher cost. It was with such applications as these that plastics first broke into the refrigerator field, to go on to the variety of uses which are commonplace today.

Perhaps the most recently developed use for plastics, and one for which only the urea type materials are suited, is the reflecting shade used on one refrigerator last year.* This shield, mounted above the bulb which automatically lights when the door is opened, was molded of white Plaskon, sufficiently translucent to transmit some light to the top of the cabinet, while brilliantly illuminating the lower shelves by reflected light. (Illustrated MODERN PLASTICS July, 1935—Developments of the month.)

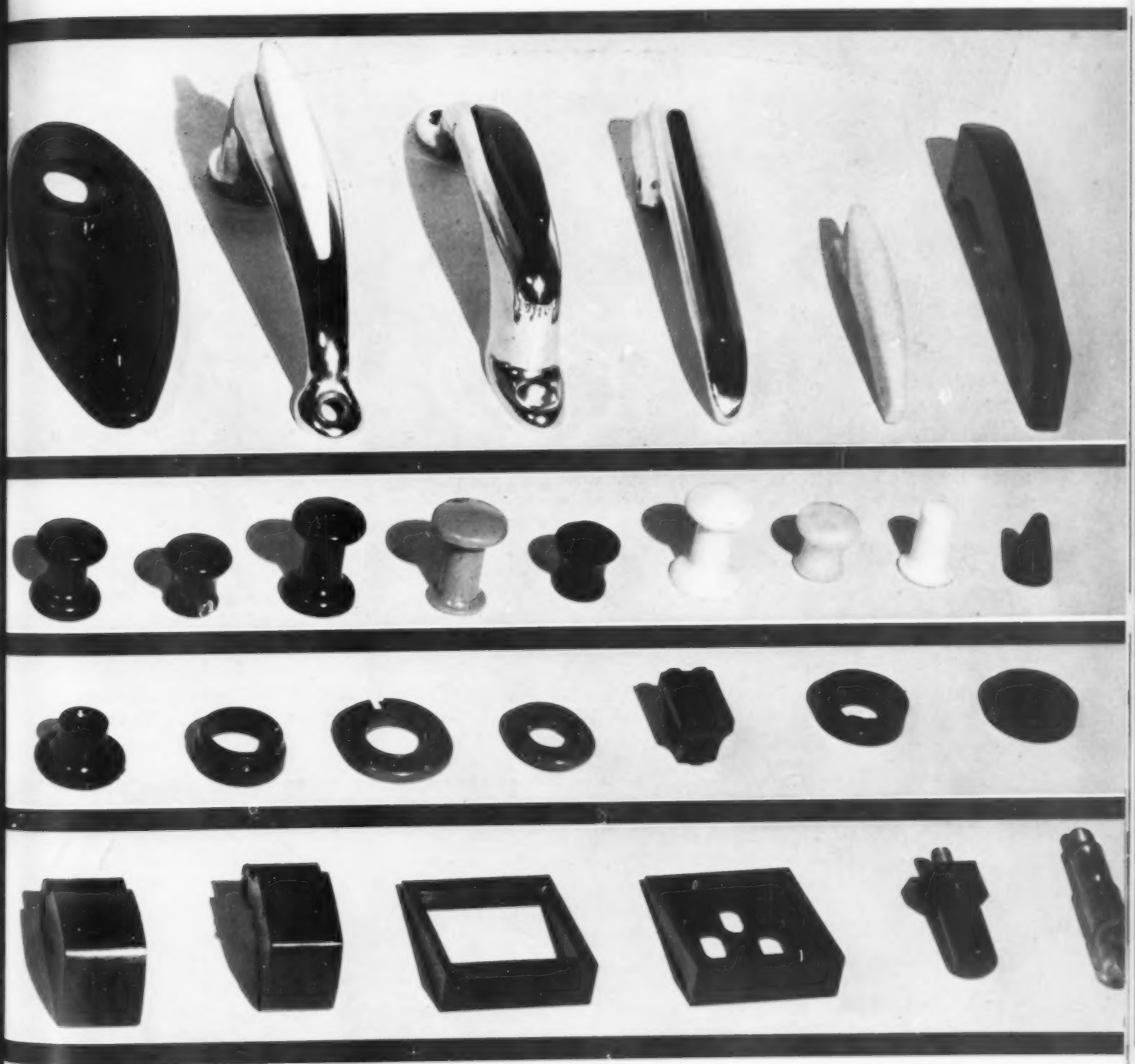
This development will in the course of time lead to the adoption of translucent, colorless molded lenses completely surrounding the bulb, except for a small space between the top of the refrigerator and the lens, necessary for ventilation. This lens will not be unlike the automobile dome light lens now in quite general use. It will, however, be considerably deeper and designed primarily for transmission of light. Through ventilating slots, direct rays of light will be reflected downward from the roof of the cabinet making an illuminating

fixture comparable to those made from opal glass, but lighter, stronger, and less costly.

Looking further into the future, it is not unreasonable to expect molded left-over dishes, lighter than glass and considerably more shatterproof. Custom molders' experience with large castings make the possibilities of molding entire motor housings extremely bright. Larger pieces have already been produced. Once these are adopted, manufacturers will consider molding entire doors, an idea now seriously considered by the automotive industry. Naturally, the possibilities of casting the entire cabinet seem much more remote at the present time, but no producer of plastics would be foolish enough to say it can't be done. The plastic industry is young enough and hopeful enough to consider this and almost anything else possible.

These intricate parts used in refrigerator construction are molded of materials chosen for their individual merit in each application. All have a permanent luster which time cannot dull—are never cold to the touch—and are definitely insulative. Molded by Chicago Molded Products Corporation

* This reflecting shade is molded of Plaskon by the American Record Corporation for Kelvinator and is on all its recent models



PLASTICS BACKSTAGE

by A. B. Laing

OF HOLLYWOOD

PLASTICS' dominance in the science of acoustics is perhaps most dramatically exhibited in the theater, where, but for pure phenolic resin, our screen would likely still be mute.

When America's eminent engineers perfected the "light valve"—that key device of uncanny ingenuity which photographs sound and thus made talkies possible—they built its "bridge" of synthetic resin. Similar to a violin bridge, it is the last thing traversed by sound on its journey of transmutation into light. A plastic therefore stands guard at the very heart and core of sound transcription.

"We have never found a substitute for it." So asserts Ray Lindsay, Universal Pictures sound department engineer who is also a prominent member of the California Television Society.

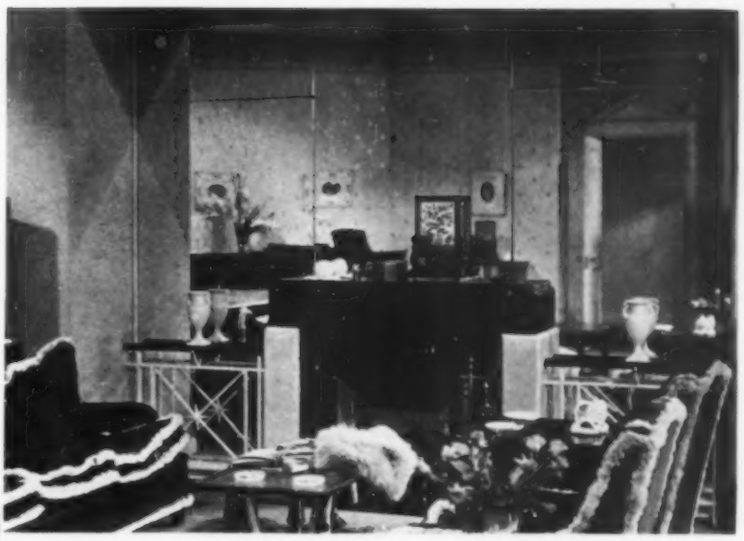
But as this acoustical expert points out, the vital light valve is only one of the numerous and highly important roles enacted by plastics in purveying entertainment for the world.

Laminated plastic is exclusively specified for coil forms, sub-panels, armatures, microphone mounting and for insulating washer rings and a thousand miscellaneous functions. "Wherever there is a need for insulating electrically, this versatile material is best, aside altogether, from its acid waterproof qualities.

"The reason for our extensive plastic orders," as Lindsay explains, "is because so many operations in the business of moviemaking call for material that combines mechanical strength and insulative properties with an extremely high heat resistance. We have found, for example, that the linen laminated types have actually the strength of sheet brass. But, unlike brass, this product cannot only be drilled, bevelled, and sawn, but subjected to normal woodworking operations as well without chipping or marring, while the material's

If you're looking at the floor—that's plastic. From "20th Century Pictures, Inc."

Plastics hobnob with gold-medallioned wall paper at $17.50 a roll in the decorative scheme of this living room scene from a recent "20th Century" picture



natural high polish obviates finishing costs."

Workers in Lindsay's department use hammers and mallets whose heads and handles are cut from insulated plastic rods—as a protection to wood or metallic surfaces that would be sensitive to blows from an ordinary tool.

This department's point of contact with the "Storm Over the Andes," "Magnificent Obsession," "She Gets Her Man," and several other plays that were in simultaneous production, is through conduits reaching out tentacle-like direct to the sets—where the spidery arm of the microphone follows the

Chessmen and table tops of synthetic resins and a floor varnished with plastic base. Shown in the center photograph

Below—A modern architect's office as portrayed on the screen. See how the decorative use of plastic objects make them stand out in relief from the white note that predominates. Both scenes from the Universal lot

Photos by PARAMOUNT PRODUCTIONS, INC

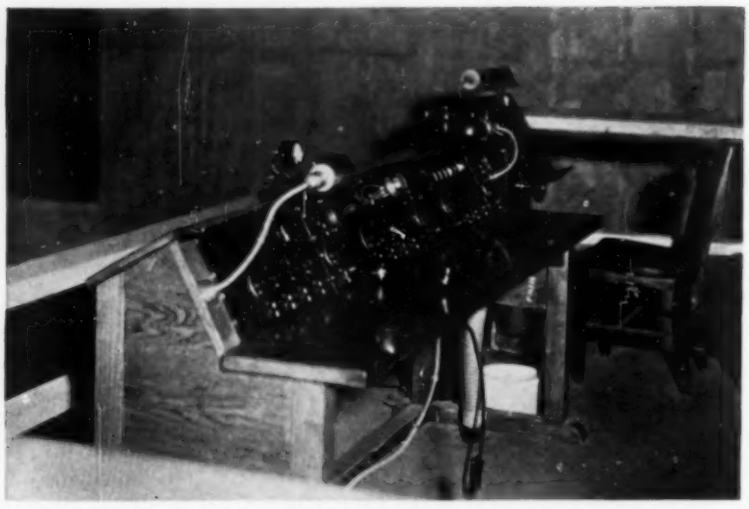
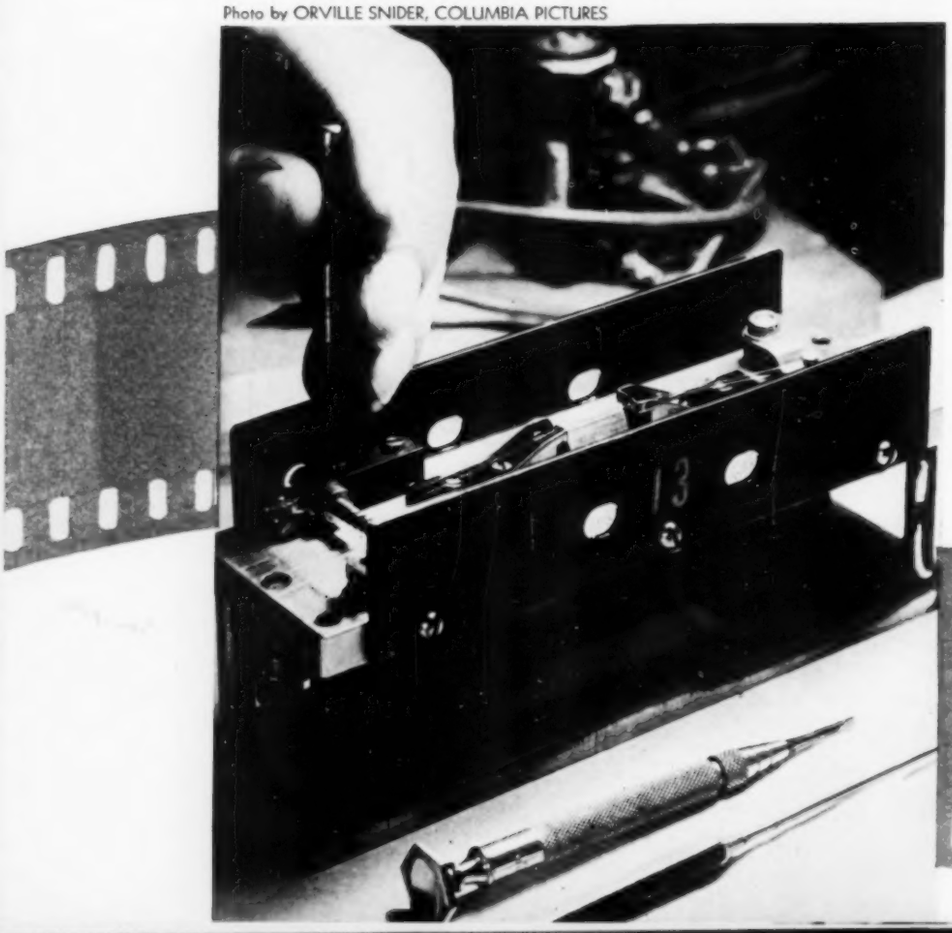


Photo by ORVILLE SNIDER, COLUMBIA PICTURES



players and picks up dialogue, music, *et al.*

The vital components of this new ball microphone are of molded plastic. Moreover, the whole assembly is heavily plastered with plastic varnish, permitting the sensitive apparatus to go "shooting" in driving rainstorm, fog scenes—and such episodes as when a director the other day decided to insert a bit of symbolism into the play, and ordered the microphone swung over a vat of bubbling lye to record the steamy hiss. Without its plastic coat, such highly realistic "business" would have been impossible.

Then there are the cameras, electrically powered, that must follow the action of the play through caustic vapors, fire, flood—to remote locations in equatorial or polar regions. (*Continued on page 62*)

At the top—Millions of candle power focused on a few square feet of plastic varnished floor. "The hotter it gets, the harder it gets"

In the center you see one of the phenolic mixing control tables in the sound department at the Paramount studio. It is used to adjust relative volumes of various sounds which are being put together to form a composite sound track

At the left—This light valve with its bridge of molded phenolics is the delicate, pulsating heart of the talkies production system. The hand adjusts its tiny, hair-like pair of platinum wires, seen passing lengthwise through center of the "gadget." Sound passing through the wires causes their vibration toward and away from each other. This allows a varying amount of light (when the "gadget" is set in the film sound recording machine) to pass through. The flashes of light, as many as a thousand to an inch of film, photograph or record the sound waves on the film.

Telling customers how

Now, up pops Macy's with a graphic display which lets the cat right out of the bag for every one to see

IN one of the 34th Street windows of R. H. Macy & Co., recently, there appeared rods and sheets and tubes of cast resins ingeniously arranged to show women—and men, too—just how these colorful materials are fabricated and how they look during their several steps from the mold to the finished button, buckle, bracelet or pin. Different shapes of tubes were displayed including those used in the fabrication of both bracelets and buckles. These tubes of cast resin from which bracelets are made, aside from their gay color, resemble old time phonograph records standing on end. But, near them, to illustrate the process, was a tube with corrugated ribs ready to be sawn, and next to that were slices of the material showing the first operation, which gives a definite indication of the form the finished object will take. Then came examples of carving in the rough, followed finally by a splendid display of finished bracelets of many colors, some with inlay, all smoothly polished and glistening.

Buckle tubes and rod stock were similarly shown. Buckle tubes in the form delivered to the fabricator have no great beauty, other than the natural beauty of the material itself. But when contrasted with the first crude slices, then etched and carved and polished, the wonder of the simplicity of it all makes its greatest impression.

Rod stock, and its transition into pins, earrings and buttons, was similarly treated, in the display window with examples of each step in the process of fabrication so clearly shown that no mystery remains. Sheets of cast resin in brilliant reds, contrasting with pure white and clear, were laid out in scratched pattern which clearly indicated the eventual shapes of the clips and pins to be cut from them. From one or two sheets, these patterns had been actually sawn and were laid beside the sheet from which they were cut like the missing parts of a jig-saw (*Continued on page 61*)

Molding removes objections—lower costs

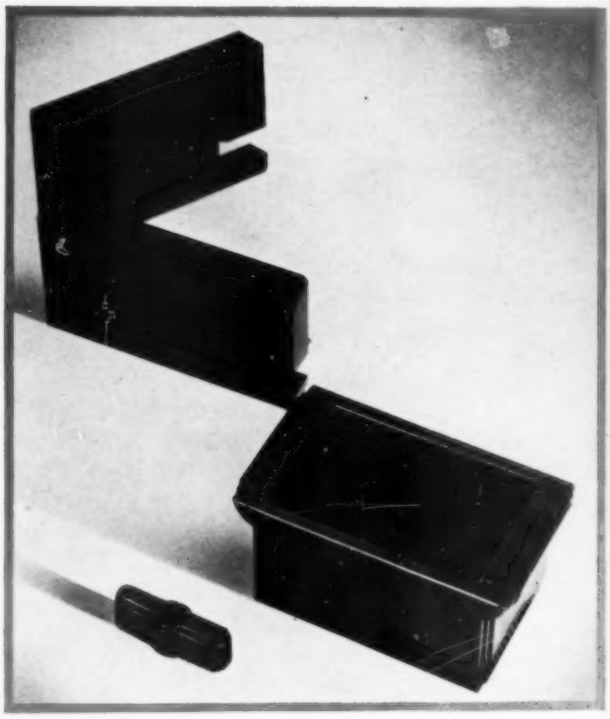
By E. F. Lougee

WHENEVER a major industry takes time out to look over its individual equipment it often finds things that could be wisely changed to improve service or step up the appearance of its customer equipment. Such changes involve vast expenditures and they are considered and examined from every angle for justification before being manufactured. A more substantial reason than mere physical appearance must usually be found before any major change is undertaken. But when the engineers decide that a piece of standard equipment should be replaced by more modern design something is bound to happen. Especially when such redesign indicates substantial savings in the cost of manufacture.

The blue oval call-box of the Western Union Telegraph Company has been a familiar object in offices these many years. Some time ago, however, engineers at Western Union began pulling it apart and looking it over. They decided that a smaller box of better design would be an acceptable change, more in keeping with the general trend in modern decoration, so they set about designing a new mechanism that would fit into a smaller box.

The old boxes of enamel on porcelain bases frequently chipped and were unfit for re-installation without re-enameling once they were removed from service. So while they were about it these engineers decided to look into the merits of other materials for the housing of the box. Thus came a search for materials more in keeping with contemporary decoration, and plastics, of course, were among the first to be considered because of their general acceptance in office furnishings and in the home.

Plastics are not new to Western Union engineers. Phenolics have been used for insulative work and for some industrial housings for many years, but they had never been used in general instrument installations except for insulative parts concealed within the mecha-



The three molded parts of the new Western Union call box replaces the porcelain base and enameled metal housing previously used. Phenolics are lighter, do not chip, and actually cost less. NOTE that the wire channel (reflected in mirror) and bronze inserts are molded into the plastic base. The turn-button is reinforced with a bronze strip molded in.

The smaller box of simple lines is more in keeping with contemporary decoration

nism. From the standpoint of appearance, plastics won first place in the choice of a new material. Then came tests to compare their other properties, with those of materials previously used, to determine their availability. Experiments showed that they did not chip and would therefore be more satisfactory on that point. They were sufficiently insulative and considerably lighter in weight than porcelain for the base. In fact the weight of the three molded parts in the new box combined is less than that of the old porcelain base alone, which represents a very definite saving in transit expense and lightens the load of those who tote the equipment around on installations.

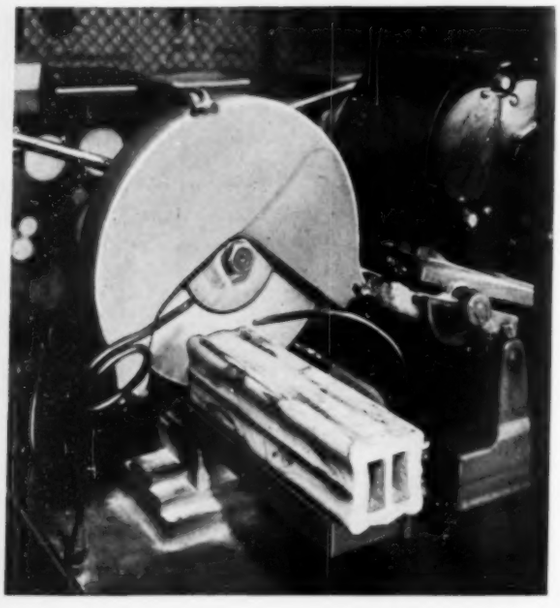
With appearance, insulation, non-chipping, and weight, favoring plastics, cost was the next point to be settled. It was known that mold costs were high, and molding the housing for call-boxes is a precision job. Three bronze inserts for attaching the mechanism of the device must be accurately placed. Screw holes for attaching the instrument in place must be molded in, and all parts must be interchangeable. Wall thickness must be carefully controlled and sufficient at all times to withstand rough usage in transit, installation and re-installation without damage.

When costs were obtained, it was learned that the price of the first five thousand call-boxes of molded

plastics including amortizing mold costs for the job was practically the same as for a like quantity of the old style enamel and porcelain boxes. On all additional boxes to be made, no mold costs need be considered.

The new Western Union call-box, aside from its lower cost, represents a vast improvement over any previous model. Its smart design is in keeping with the best of contemporary archi- (*Continued on page 56*)

1



2

3

Machining cast resins

DESPITE the tremendous growth in the use of cast resins, there are still comparatively few plants working these materials. This discrepancy between actual and potential usage is not due to any lack of quality in cast resins, as such. Their beauty and utility is widely recognized. It is rather due to the inevitable lag between the introduction of a new material and the acquisition of a knowledge of its fabrication requirements by industry at large.

The mention of cast resins to the average manufacturer presents a series of questions. "Do I need special equipment?" "Will my workers require special training?" "What are production costs?" "Can I use this, that, or the other process?"

On the pages which follow, MODERN PLASTICS presents the answers to the more elementary of these questions. It cautions manufacturers to remember that fabrication technique is advancing at a rapid pace—that today's impossibility is tomorrow's standard practice—that detailed questions, relating to particular problems, can best be answered by the engineers of the various resin-casting firms.

In What Forms Can Cast Resins Be Secured?

There are two general types of castings. *Standard shapes* (such as rods, tubes, sheets or blocks) are usually

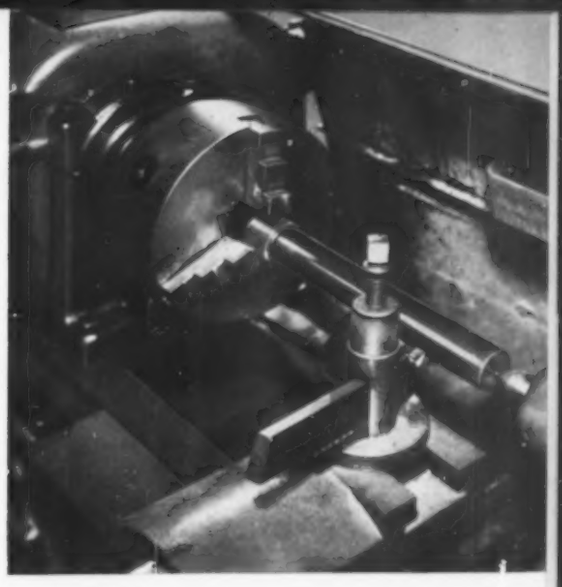
1. The band saw is used for cutting clock housings and similar parts from cast resins

2. The abrasive cut-off saw is important in producing thin parts from rods and sheets

3. Candlesticks and other parts of irregular contour are shaped in a wood-turning lathe

available in stock sizes on short order. *Special shapes* (being so designed as to require a minimum of machining and waste in fabrication) are cast to order by the resin-manufacturers and require from several days to two weeks for delivery.

It must be remembered that the number of standard shapes is constantly growing . . . including fluted, hexagon and other shapes of rod, etc. Special castings, such as clock case shapes, rods with profiles suitable for jewelry fabrication, and others are also available from stock. One company lists as stock patterns the following: cutlery and kitchen handle shapes, cigar and cigarette holder shapes, pipe stems, clock cases, buckle slides, hardware and lamp parts, etc.



4

Can Cast Resins Be Safely Stored?

Unlike the inflammable plastics, no unusual provisions must be made for the storing of castings. They should be kept in a comparatively cool room at even temperature. Exposure to excessive heat and light should be avoided.

5

What About Sawing?

Jig, circular, or band saws can be used in sawing. Small pieces can be cut from rod stock or special shapes on abrasive cut-off saws of the type shown in Figure 2. Hack saws may also be used. Speeds of from twelve to thirteen hundred feet per minute are recommended for band saws. Fourteen to fifteen teeth to the inch and half-inch saw widths are advised for most work.

What About Drilling?

Drills similar to those used for brass work are recommended, ground as for cutting brass and with a generous feed. Thus, chips will clear easily and clogging of the hole will be avoided. For deep holes, twist drills with large flutes are advised as is the occasional lifting of the drill from the hole to remove chips. Non-alkaline cooling compounds may be used, though these are not absolutely essential.

6

Can Cast Resins Be Threaded?

Standard taps and dies can be used to thread cast resins. Most makers advise (*Continued on page 57*)

4. Straight and taper turning, boring, and thread cutting are done in an engine lathe

5. Sawed flat surfaces are smoothed off on a sanding machine before polishing

6. The first step in polishing a "crystal" ball on a three wheel machine

Illustrations courtesy of Machinery Magazine and taken at demonstration shops of American Catalin Corporation.

OPPORTUNITY IN HOUSEWARES

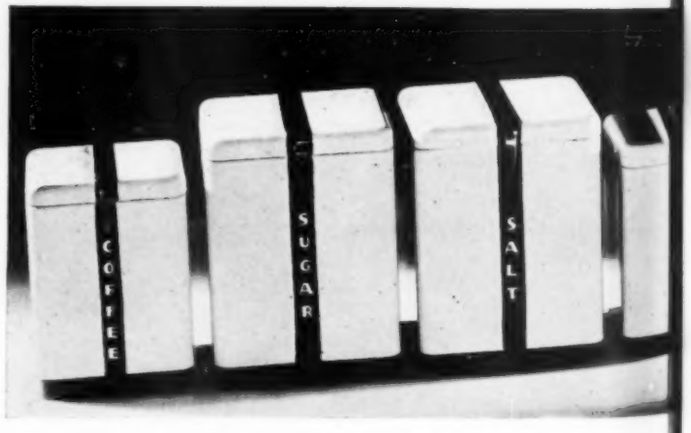
A RATHER hasty cruise through four floors of the Hotel Pennsylvania, where the Housewares Show was staged last month, revealed an increasing use of both cast and molded knobs and handles on metal ware. There is nothing new about that except the increased evidence of interest in the material, brought about largely because, among others, Sampson-United Corp., The Kromex Corp., and Manning-Bowman Co. introduced the custom and everybody thought they might be missing something unless they followed suit. There is little evidence of originality in the adaptation although Sampson-United have taken a step in the right direction by redesigning the handles of a waffle iron along new swirling lines which give the utensil a less static appearance and make its handles look less like ears. Generally speaking, the great majority of the knobs and handles on display are just handles and knobs per se.

Another original application, or at least it is the first I have seen, is the use of cast resin handles on a chromium sugar and creamer set which includes a well-designed tray. This is introduced by Kromex, Inc., and is pictured here.

A clever use of ureas appears as a spring release lever on a series of matched kitchen canisters and cabinets made by Watts-Morehouse Mfg. Co. It is in the shape of a narrow strip of bright Plaskon, hinged against a broader panel of contrasting enameled metal, which when depressed at its lower tip, frees the cover of the canister to open automatically without lifting. A splendid idea when the housewife wishes to get a measure of sugar or flour from the canister when her hands are wet or covered with dough. The gay urea lends a decorative note which makes these well-designed sets distinctly attractive. (See illustration.)

There is ample evidence of improved design among the exhibits and an equally apparent lack of understanding of the potential application of plastic materials. Salesmen, with few exceptions, still do not know whether the knobs and handles on their products are of Bakelite or Durez; Beetle or Plaskon; Catalin or what. You have only to ask them, to learn. They simply know they are better than wood and that they will not burn, and after all, that is something. At least it is a recommendation of the materials as a group but there is plenty of room for missionary work and definite education to be done before it can ever be hoped that the public will know what it is getting when it buys these gadgets in the store.

Refrigerators on display show many practical applications of the material so far as they go and they are well outlined in an article by Mr. Shepard which appears on Page 11 of this issue. Perhaps there are no other uses in the refrigerator industry for plastics in their present stage of perfection, but there is certainly an opportunity for experimentation with molded doors which may expose surprising savings in labor costs be-



A new Coffeelator set, introduced by the Sampson-United Corporation, Rochester, N.Y., has a smart serving tray of black phenolic material, which, aside from its utilitarian purpose, is an excellent foil for the chromium and heat-resisting crystal of the Coffeelator, sugar, and creamer.

Matched accessories designed to harmonize with modern kitchen appointments are made more gay and more practical through the use of urea levers of contrasting color. These release levers are hinged so a slight pressure at their base releases the cover which opens automatically. From Watts-Morehouse Mfg. Corp., Jackson, Michigan

sides improved appearance and efficiency of the device.

Our visit to three displays of carpet sweepers failed to reveal a single housing of molded plastics. Metal and wood predominate, yet there is room for reasonable doubt that they are either cheaper or better for the purpose. Metal must be stamped. It must be welded if it is to be permanent in fundamental construction. It must be cleaned, polished and primed, enameled and baked, all requiring many handlings by skilled laborers whose wages are high. Assembly requires drilling and fitting of bushings and bearings for brushes and aprons which cannot be done by machine without the assistance of much hand labor. Enamel sometimes chips even when carefully applied. A chipped and dented carpet sweeper cannot be considered good advertising for its maker in the home. Wood requires a similar amount of hand labor which is expensive. Do these manufacturers know about plastics? Do they know that it is possible through one single operation to produce a carpet sweeper housing with its bushings and bearings all in place and with a smooth, lustrous finish of any color that will neither dent nor chip? Do they realize the possible savings in hand labor that can be theirs if they switch to plastics? The right answer would be interesting to know.

As we looked at the canisters which hold coffee, flour, sugar and the like, we couldn't help wondering why some manufacturer doesn't mold them of plastic with a strip of transparency which would show the level of content without lifting the cover. It would take them out of the price class of close competition and give them a degree of utility and merchandising appeal they have never yet enjoyed.

Another question to which (*Continued on page 61*)

Cast resin is shown here in what appears to be a new application—gaily colored handles on a sugar and creamer of chromium. Made by the Kromex Corporation, Cleveland, Ohio

At Soda Fountains, too

SANITATION may now be carried to the n'th degree at soda fountains, through the medium of plastic molding. The Individual Drinking Cup Company's "Dixies" first introduced a new idea in sanitary one-use waxed paperware for fountain service. Recently the same company complemented their famous line of "Dixies" with a novel and ingenious "pick-up" holder, of molded plastic, extending to the ultimate user the company's manufacturing process by which no hand ever touches "Dixies." Plastic materials were selected because of light weight, economy, durability and beauty, with special consideration for the sanitary qualities of the plastic material.

Mechanically, the Dixie "Pick-Up" Sundae and Dessert Dish Holder automatically picks up the paper dish, firmly inserting it in the holder. Three prongs which form a part of the plastic holder are grooved at the top, and, into these grooves, the rounded edges of "Dixies" snap snugly, holding the dish in position while being filled, and retaining its steadiness while the contents are consumed. The plastic material avoids the danger of bending, expansion or contraction. Molded of black Arcolite by American Record Corporation.

EDITORIAL COMMENT

ONE year ago, in September, MODERN PLASTICS came to you with the avowed purpose of serving "as a clearing house between the needs of the plastic consuming industry and the ingenuity and inventive skill of plastic producers." We may have appeared, at times, to serve an al fresco fare—trite to some, indigestible to others. But, withal, there has been a constant endeavor to increase the appreciation and consumption of the materials which come within the general classification of synthetic plastics. We have presented every worth while new development. We have shown every uncommon application of plastics as opposed to other materials and have illustrated their superior properties with substantial examples. We have encouraged intelligent and logical combinations of plastics with other materials for utility and decoration. Whenever trends have taken definite shape we have pictured them in a manner to insure the greatest interest and understanding by the layman purchaser so that he can take quick advantage of plastic materials wherever they can be practically and economically employed in the manufacture of his own merchandise. And we have maintained a high type format commensurate with the I. Q. level of our *known* readers.

Through a series of articles interpreting the work of professional designers we have interested industry as a whole in the advantages of improved design, and have interested designers themselves in the broad assortment of synthetic materials from which they will be better able to specify with satisfaction as they begin to enjoy a more intimate acquaintance with the physical properties of each group. Articles illustrating important applications of plastics—molded, laminated, and cast—in the field of building construction, and exterior and interior decoration, have been aimed to the enlightenment of architects and builders in their use.

With the active cooperation of most of the leaders in and associated with the industry, we have been able to present a happily balanced diet of technical and non-technical editorial material in which our wide group of readers in diversified fields of activity would find interest and dependable information.

August is no time to present a crop of statistics although our files are well freckled with inquiries from readers the world around showing a healthy interest in the subjects discussed and an ever-increasing demand for information about plastic products and plastic materials. Our enthusiasm for these subjects, on which we have never set ourselves up as experts, has occasionally caused us pain which we have diagnosed as growing pains incidental to our job and suffered accordingly. We have enjoyed equally the bricks and bouquets which greet our every issue, but our preference in bricks, if we may express it, leans toward those which come to us well wrapped in Kimpak (adv.) and plainly labeled in bold type.

We enter our second year with increased experience and enthusiasm, believing that public interest in plastics is just beginning to get its stride. The year ahead will reveal startling developments within the industry. Moldings of unbelievable size will appear. Transportation and housing will find new uses and economies through intelligent use of available plastic material. Designers and decorators, through a better understanding of its possibilities, will take greater advantage of its permanence of finish and its intrinsic decorative qualities in combination with other substances. Engineers will add consistently to its general acceptance. Chemists, to whom the industry is unquestionably indebted for its very existence, will create new products and improve the physical properties of accepted plastics to broaden their scope of usefulness in every field of industry and commerce.

Perhaps the most encouraging phenomenon of the plastic business is the obvious fact that no one material nor group of materials dominates any specified field of activity. The industry is interwoven with a healthy spirit of friendly competition which insures its lively growth in both size and importance. The real job ahead of the industry is one of education and publicity. The public must be apprised of these modern materials which are theirs for the asking. Manufacturers must be shown how and where these materials fit in best with their plans of production. Retailers must be made conscious of the profits which can be theirs through proper advertising and merchandising of items made wholly or in part from plastic materials. With this twelfth issue therefore, we renew our pledge of conscientious service to the entire plastic industry.

WILLIAM L. KELLY

HENRY D. RANDALL

CHARLES L. GABRIEL

If we were giving MEDALS

. . . we'd pin one on . . .

William L. Kelly, Vice-President of the Chicago Molded Products Corporation, because he is one of the early pioneers in plastic molding—both in years and in his substantial contribution to the industry; because, as an Electrical Engineer, graduated from Northwestern University, he recognized the future of plastics and joined the Belden Manufacturing Company as foreman of its molding room; because of the many fundamental improvements in molding production which he developed there, and later, as manager of the molding department of the H. G. Saal Company; because when Bachner Brothers formed the Chicago Molded Products Corporation, he became its vice-president and general manager; because he has developed the molding facilities of this Company to a high point of efficiency and has helped build and train its very capable organization; because he spends a generous part of his leisure time experimenting in a well equipped machine shop he has installed in the basement of his Chicago home; and because he admits he is an excellent golfer.

Henry D. Randall, Sales Manager of the Plastic Department of General Electric Company, because of his keen appreciation of the needs and requirements of those who buy plastic products, and his happy coordination of the efforts of the molding and lamination divisions of the General Electric Company, to meet them; because of his genial and friendly nature (he only looks like this while his photograph is being made); because he has arrived at his present seat of authority from a humble apprenticeship in lamp manufacturing with Westinghouse Electric & Manufacturing Company—after graduating from Amherst College and with one year's post graduate work at Massachusetts Institute of Technology—which led him into sales work with Westinghouse in Seattle and, later, he became manager of its Spokane office; because his experience in selling electrical machinery and water wheels for Allis-Chambers brought him, in 1912, to the General Electric Company as manager at Salt Lake City, then as District Manager at Denver, and because, finally in 1925, he took up the cudgel for plastics at the Lynn plant.

Charles L. Gabriel, because at the ripe old age of 39, he became President of the Resinox Corporation (owned by Commercial Solvents Corporation and the Corn Products Refining Corporation) when that concern was organized in 1930 and has been the moving spirit which has contributed so greatly to the plastic industry through the development of Resinox—a molding compound; because, as a Graduate Chemical Engineer from Massachusetts Institute of Technology with a Master of Science Degree in Chemical Engineering, he entered the World War as First Lieutenant in the chemical Warfare Service; because at the end of the war he entered business with Commercial Solvents Corporation doing technical sales work, becoming Vice-President four years later; because, in addition, he is a Director of Resinox Corporation and the Thermatomic Carbon Company; and because, withal, he is an actively interested member of the Chemists' Club, the Technology Club of New York, the American Chemical Society, and the Military Order of the World War.

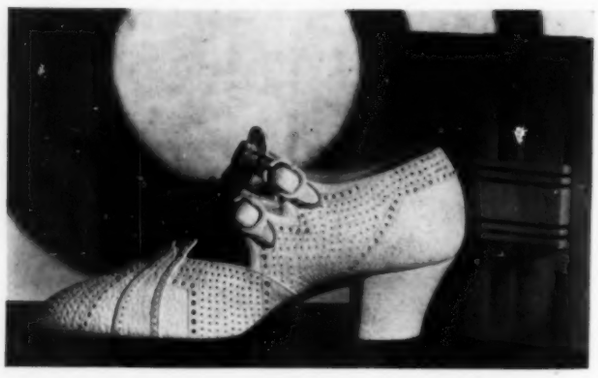
A good plastic won't down

by Herbert Chase, M.E.

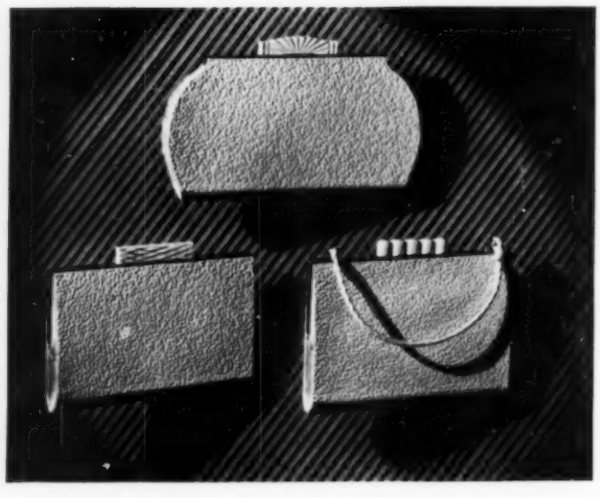
PLENTY of evidence that you can't keep a good plastic down is to be found in records of many a manufacturer of such materials. Temporary lapses in demand, arising from changes in style, competition with newly developed plastics and other factors are not uncommon, but the inherent merits of proved plastics and the determination of their makers to find new applications and new outlets for their materials bears fruit in the long run, and production generally speaking, can be expected to return to a normal level.

A case in point will be found from an examination of the records relating to nitrocellulose plastics which are not only among the oldest types but which have attained, perhaps, a greater diversity of use than any other type and possess many excellent properties. Not so many years ago, the nitrocellulose plastics, which include Celluloid, Fiberloid, and Pyralin, among other makes, found a very large market in hair pins, hair combs, and other hair-dressing and hair-ornamenting products. The sudden advent of bobbed hair styles, however, reduced this market very greatly, although many nitrocellulose combs continued in use, of course.

To make up for this deficit, however, nitrocellulose soon found another important application. This time the decoration was for the opposite end of the human anatomy. Leather for the heel covering of women's shoes was found to scuff easily. A scuffless substitute, which could be made to duplicate the many leathers employed, so far as appear-



Stetson shoe of Norwegian veal leather showing one of the many scuffless nitrocellulose heel coverings produced to duplicate any leather in appearance. In this instance, the material used is Pyralin in a form called "Pyraheel." The leather bag in the background has a plastic ornament as well



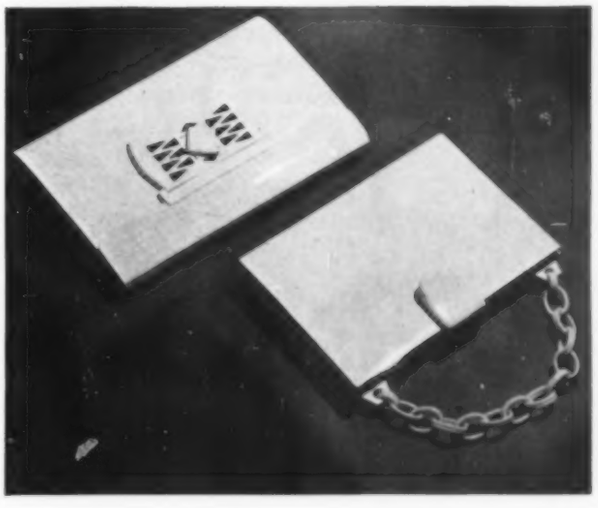
Example of smart white handbags of Pyralin in "nail-head" design with a glittering surface easy to keep clean. The matching clasps are made from another plastic, probably cast phenolic. Made by M. J. Fox & Co., Baltimore, Md.

ance was concerned, was wanted and found in nitrocellulose sheet. Today, as for several years past, scuffless heels provide a wide and important market for nitrocellulose.

More recently has come the vogue for handbags made largely from nitrocellulose sheet. This vogue originated in Paris, where a smart designer seized upon this gleaming and clean material as being ideal for handbags. An alert American manufacturer of the material had samples of the bags dispatched to this country, showed them to American bag manufacturers and retailers, found them enthusiastic, and in less than a year had developed another new market for nitrocellulose sheet. To date, this vogue has been quite largely for summer bags in white, but it is now extending into bags of darker colors to match or harmonize with costumes used in colder weather. The Celluloid Corporation has featured this departure in recent advertising.

Advent of the scuffless heel and nitrocellulose handbag has brought new markets, probably more than offsetting those lost in hair accessories. Besides the sheet stock used in bags, top bars and fastenings are also of nitrocellulose in some cases. In others, cast phenolics are employed for the purpose, and this vogue has spread to ornaments for leather bags which has benefited the plastic producers. There are, moreover, signs of a recrudescence in plastic hair ornaments, at least among junior debs, as well-designed bandeaux of nitrocellulose in various shades, having a practical value in keeping the coiffure in place, are coming into vogue and general usage again.

During this cycle of change, many other factors have been at work, to affect the market for nitrocellulose plastics. Very important among these has been the perfection and extensive marketing of cast phenolic plastics. As these are less expensive than nitrocellulose and are available in many of the same attractive colors, they have cut heavily into the market for nitrocellulose, especially in heavy sheets, bars, and tubes. As a result, the important makers of nitrocellulose are now producing cast phenolics as well in competition with those who make only phenolic types. Both types of material are still used in the dress accessory field as well as in costume jewelry, though in both lines, including buttons, of course, the phenolics are (*Continued on page 54*)



Nitrocellulose bandeaux are returning to style and are now available in several popular and pleasing designs of which those shown are produced from Pyralin. They are light in weight and easily cleaned, and can be had in white as well as in pastels and darker colors. Product of DuPont Viscoloid Company

Top bag in the lower photograph is of Fiberloid sheet stock manufactured by Landis Leather Goods, Inc., while the bottom one is made from Fibestos—by Rex Products Corporation. Fiberloid (cellulose nitrate) and Fibestos (cellulose acetate) are both made by the Fiberloid Corporation, Indian Orchard, Mass.

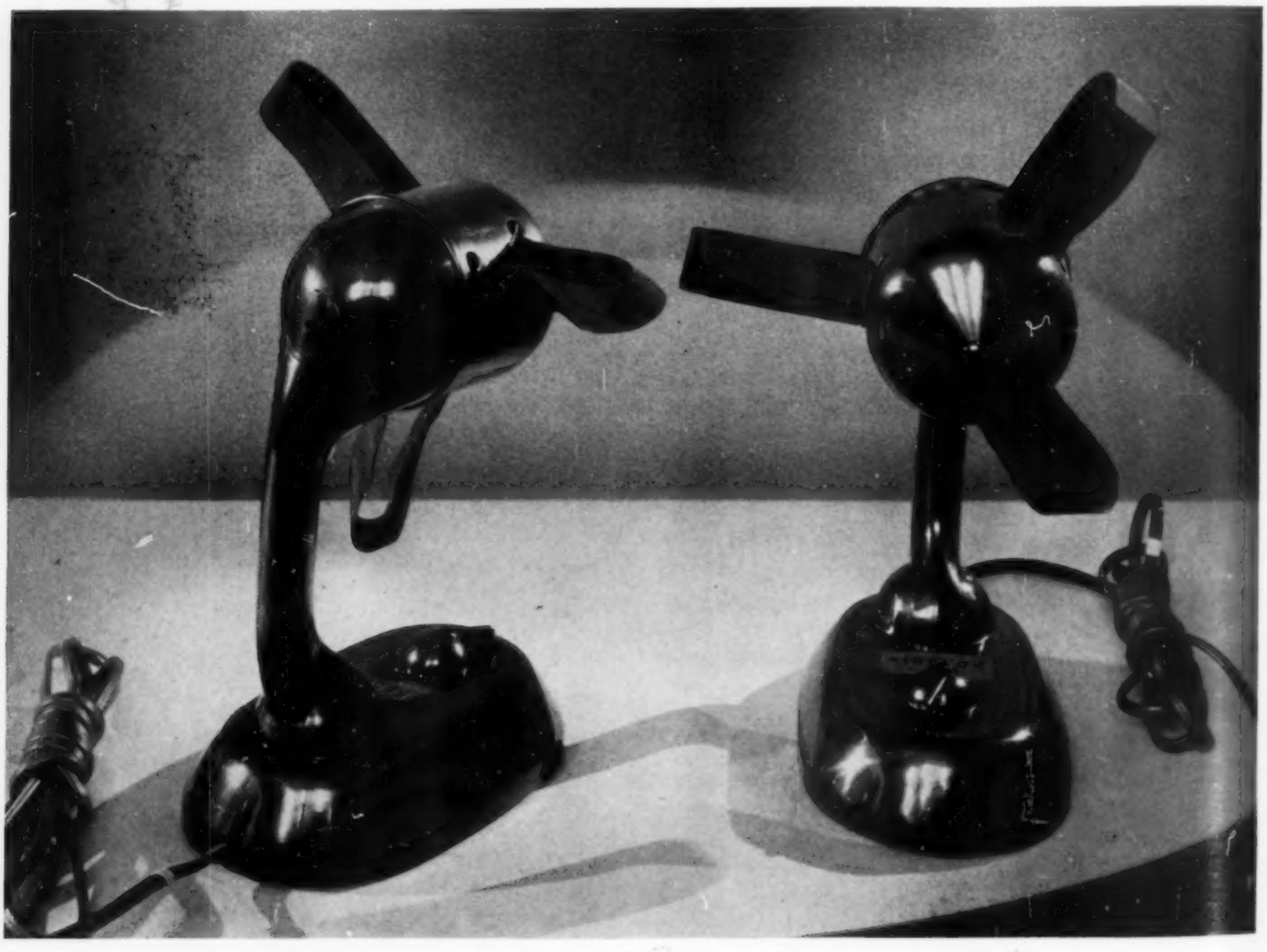
The Airflow Safefan Is MOLDED

THE determination of retailers to accelerate a sluggish market with merchandise of advanced design and unique challenge has brought forth some outstanding improvements in commonplace items. These improvements, in many instances, have proceeded beyond a mere change in physical appearance, going deep into the roots of fundamental functions and engineering principles. Almost without exception, the things we use day by day and to which we have become thoroughly accustomed, have their faults, and could be improved. We continue to use them as long as nothing better comes along to take their place. But as soon as some manufacturer introduces an obvious improvement in his merchandise, our pent-up resentment toward remembered inconvenience or imperfect service we have experienced prompts our innerselves to remark at once: "That is a good idea, I would like one of those!"

The Airflow Safefan created by Sears, Roebuck and Co., and sold exclusively through its stores is that sort of improvement. It represents a straightforward departure from accepted principles of electric fan manufacture and is a direct result of retail initiative. The base and standard are molded of maroon phenolic resin reinforced with steel, and the conventional metal blades are replaced by three grosgrain ribbon blades which make it absolutely safe in operation and obviate the necessity of any protective cage. The operating principle of the Safefan is such that a greater displacement of air occurs than with the old type fans of equal diameter without concentrating the air flow to a narrow point. The Safefan displaces air in a wide radius, creating less velocity at any one point. This tends to make it more practical than an oscillating fan and prevents discomfort or ill effects when one sits in the path of the air stream.

The fan is equipped with a three point switch and when operated at low speed on an executive's desk, perfect circulation is obtained without disturbance of papers and without appreciable noise.

It is appropriate indeed that this new fan which marks a definite advance in engineering design should employ a new material in its physical construction. Molded plastics contribute a smart finish which will never mar, is easy to clean, and pleasant to see. The Safefan is molded of Bakelite by the Diehl Manufacturing Co., Elizabethport, New Jersey.



Dangers eliminated in high cycle, polarized service

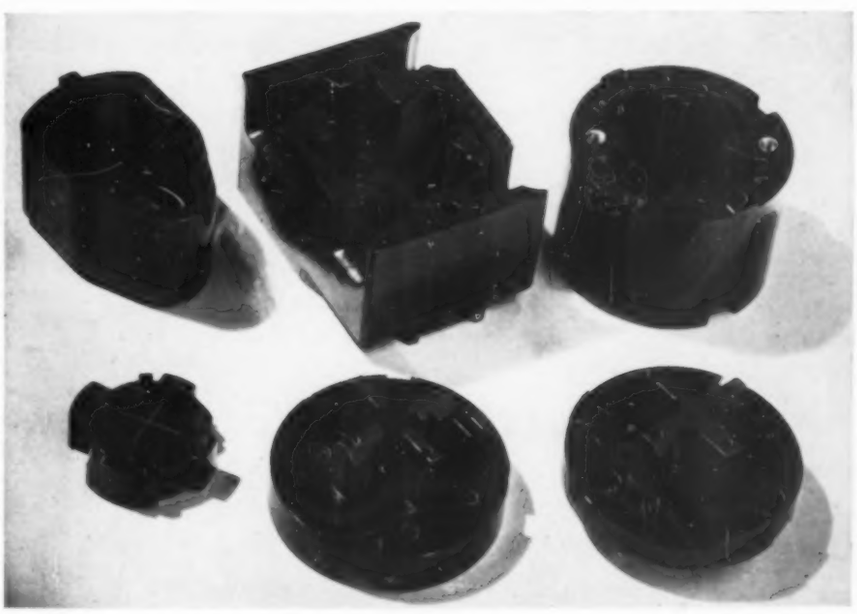
The new Hubbellock receptacles and connectors, for use with high frequency portable tools, are typical of the highest developments in this field, for they call upon phenolic moldings for almost every one of the unusual qualities which—as a group—have brought plastics to their present favored position in industry.

Basically, of course, the reason for the wide usage of both laminated plastics and plastic moldings, in the electrical field, is found in their ideal insulating qualities. Here, they surpass most other materials and are in turn excelled by only a few, the use of which, in most cases, is ruled out by other considerations.

Yet insulating or dialectric properties alone would never have brought moldings into their present prominence. Mechanical strength and the ease with which they can be fabricated into an infinite number of shapes stand as another major factor (*Continued on page 59*)

● The assembled Hubbellock receptacle and plug discloses a neat appearance due, in no small measure, to the fine finish inherent in the molded parts. Note the position of the plunger in the receptacle, preventing accidental contact with the current-carrying wires inside. Note also the unusual shape of the entrance, permitting the insertion of the plug in none but the proper position

● The unassembled moldings disclose a complexity of shape achievable—in one operation—only through molding



THE fanfare of well-deserved publicity that has met so many of the more novel developments in the plastic field lately, has tended to obscure the continued progress which electrical engineers and plastic molders have been making in the older and more basic electrical appliance field. Yet it is important that neither plastic-producers nor plastic-users should overlook this major sector of plastics development, for out of it have come—and will continue to come—many of the most important plastics discoveries which later find application in commercial, architectural, mechanical or decorative applications.

CCA

Modern Plastics is happy to announce its recent election to membership in Controlled Circulation Audit, Inc.

This is a foreward step of major importance. An accurate circulation report by an impartial outside source is thus made available to those interested.

It is likewise of importance to advertisers to know that the relatively young but stable plastics industry has eagerly accepted, and earnestly supports an industrial magazine like Modern Plastics. Moreover, the membership of Modern Plastics in Controlled Circulation Audit, Inc. is valid proof of the size and character of our circulation. Modern Plastics' advertising columns are, therefore, a certified advertising value.

To have, in less than a year of existence, attained membership in Controlled Circulation Audit, Inc. is a significant achievement in itself. It is possible, however, only because of the vigor and inevitably expanding future of the industry we represent. Modern Plastics accurately reflects and speaks for the plastics industry.

We will gladly mail a copy of Modern Plastics and a copy of the Controlled Circulation Audit to anyone interested. No charge---no obligation.

MODERN PLASTICS

425 Fourth Avenue - - New York, N. Y.

London cocktails in the American manner

by Ruth Lampland

INSPIRED by dramatic modern effects achieved through the use of plastic materials in the decoration of cocktail lounges and bars in this country, London designers and architects are introducing plastics as decorative materials in the construction of new entertainment spots there with startling success.

The first of the new cocktail lounges in which plastic materials have been used decoratively, to any extent, is that recently opened in the Regent Palace Hotel, one of London's largest. It stands on Picadilly Circus, the British Broadway, and has a large international tourist trade as well as English business.

The new lounge is on the lower floor of the hotel, directly opposite the grill and connected with it by a small vestibule. The room is large and circular, being thirty-five feet in diameter, with a color scheme of crimson, black, and gray, with walls, floors, and furniture in complete harmony. The decoration is extremely modern: horizontal lines predominate, with smooth, plain surfaces, sharp color contrasts, a minimum of furniture with a maximum of seating capacity and comfort. The color of the wall paneling and the pattern and color of the upholstery on the cushioned wall seats and chairs provide the pleasant decorative note of intimate hospitality.

To carry out the modern feeling in colors, textures, and line, laminated phenolics were selected for wall wainscotings, table tops, and the top and front panels of the impressive bar.

Accentuating the circular character of the lounge are long built-in wall settees upholstered in a fabric of wavy horizontal pattern. The settee arms are jet black. Above the settees, the wall rises to the ceiling in alternating horizontal bands of black, gray and red laminated, each eighteen inches wide, separated from each other by three-fourths inch strips of satin-finish steel. These wide horizontal bands further accentuate the circular character of the room, and harmonize with the wall treatment of the vestibule leading into the grill. They are interrupted at intervals in the wall by decorative panels of abstract design, and rise the width of one band as they pass each half-cylinder pilaster against the wall.

The bar is framed by these tall pilasters, and its plain panels and top of laminated form a nice contrast to the horizontal bands upon the walls. Back of the

New circular cocktail lounge in the Regent Palace Hotel, London, with walls, cocktail tables and arm rests of laminated Formica inspired by the contemporary American scene

London bar American fashion

bar there are specially designed mirrors, and above it is a center clock set in a laminated frame with inserted metal figures representing conventional cocks on either side. The table tops are blisterproof and were inlaid with decoration at the Formica factory for permanence of finish. Colors and inlays desired were not available in Great Britain or Europe and were, therefore, imported for this installation from the United States.

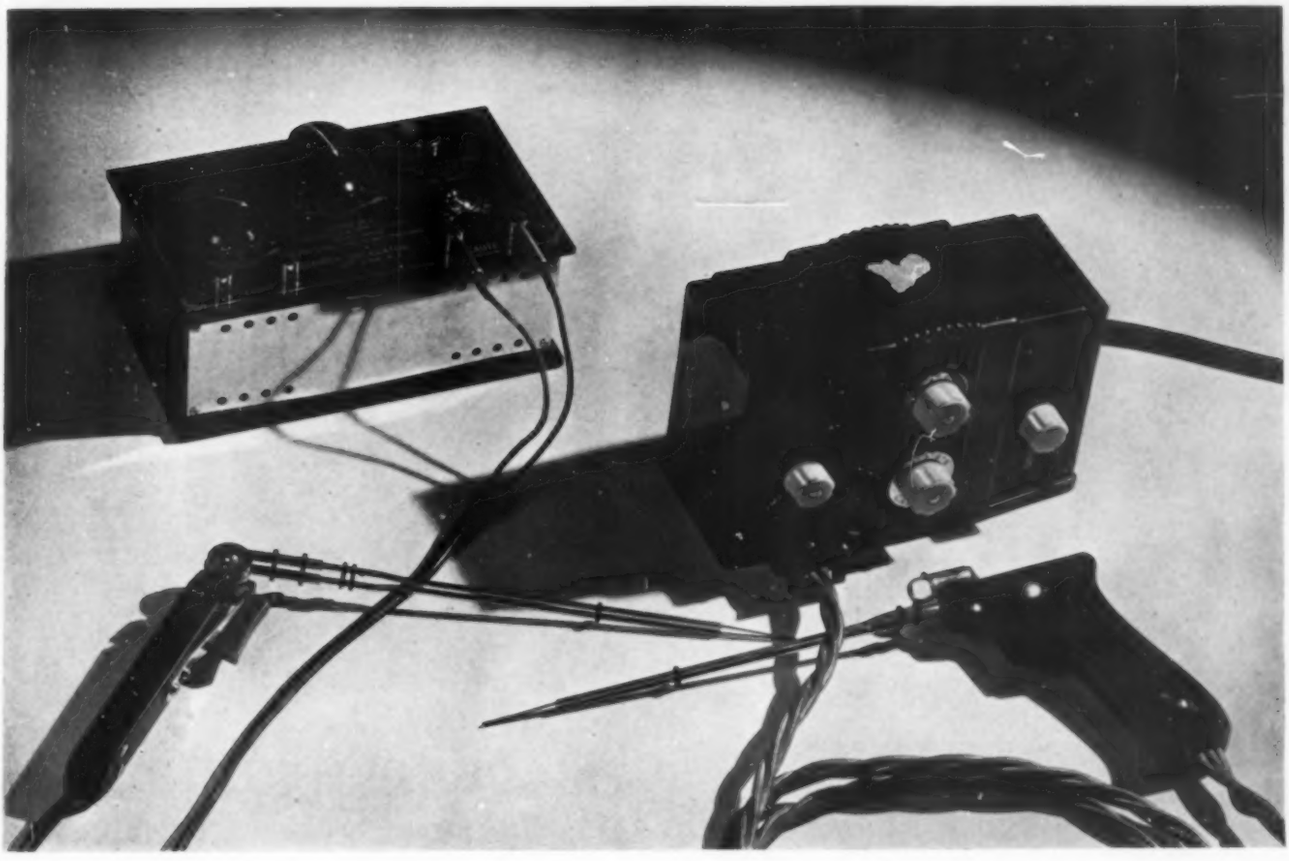
Predictions are that this bar sensation, which has already set the fashion for a new type of cocktail lounge in London, will shortly be followed by a series of similar rendezvous in which plastic materials—particularly laminated, because of its adaptability to this purpose—will be employed.

Laminated plastics for decoration and building purposes have many advantages. In this London installation the $^1/_{16}$ inch surface is veneered to a base of five-ply wood which is easy to form into wall wainscotings and coverings for large surfaces. It may easily be fitted on the job. It may be bent on reasonable radii. Its lustrous finish is coincidental without wet work and permanently resistant to acid, wear, and fire.

For table and bar tops, which are constantly subjected to alcoholic and cigarette contacts, there is no better material available. Laminated table tops have both decorative and practical advantages. An infinite number of designs are made possible through the use of colored inlays of like material or metals which assures the designer utmost freedom in exercising his ingenuity. Yet these unusual decorative advantages are obtained with no sacrifice of utility because the laminated is a hot molded material which permits neither crack nor crevice where moisture or impurities can lodge in service. Surfaces may be cleaned quickly and easily with white soap and water—an important qualification in the service of beverages and food where immaculate spic-and-spanness determines to such a great extent the satisfaction of one's patrons.

Table and bar surfaces are but a single indication of the many fields of usefulness in which laminated materials may be employed. Uncommon decorative schemes can be extended to wall paneling of corresponding or contrasting arrangements of color and design with the same permanence of finish which depends upon neither repainting nor refinishing—only occasional cleaning with soap and water—for its continued fresh and pleasing appearance. Nor is this treatment limited to a narrow range of colors or finishes. Tiles, ovals, oblongs, circles, or any required shape may be had in an almost unlimited variety of colors and finishes as the color charts from any maker of these materials will show.

The architect was Oliver P. Bernard of Thonet Brothers Ltd., the London Branch of Thonet Brothers, New York.



Design molding for physicians

THE Comprex Oscillator Corporation, coincidental with the approach of its tenth anniversary, is offering the medical profession a new cautery of simple dignity that should meet with enthusiastic reception. Its sleek molded case represents an advance over the previous model comparable with the progress in recent years of portable radios. In fact, the cabinet of the New Comprex Cautery appears to the layman much like a small radio and should materially allay natural fears of this type of surgery.

It is available in either ivory or black with contrasting black or green knobs for controlling the amount of electrical current desired for the instrument and its tiny lamp separately mounted on a "pistol-grip" handle which is scientifically designed to fit the hand in a perfectly natural and comfortable position for delicate operating. Both lamp and cautery are under instant control by a finger trigger which makes or breaks the electrical contact at will. The lamp is mounted to provide maximum illumination along the direct path of the cautery and may be used separately, when the needle is removed from the grip, for external or internal examination, as required.

The molded "pistol-grip" handle is attached to the transformer cabinet by a flexible cord and a three point contact plug which can be inserted in none but the proper position, and the current control knobs are all on one vertical plane for convenience and visibility. The double range current provides delicacy of control and safeguards lamps of from 5 volts to 10 volts.

"More than forty different models were made," states F. C. Wappler, President, "before the present design was definitely accepted, and plastics were chosen because of their superior properties over other available materials. They permit good design without extra cost. Assembly is made easier and less expensive than with a built up case. Molding permits electrical connections to become integral with the cabinet and the insulative value of phenolics and ureas from which the cases are made precludes any possibility of short circuits occurring in concealed quarters. The permanent color and finish of the materials insure the truth of our statement that the new cautery is—"Built to last a life-time."

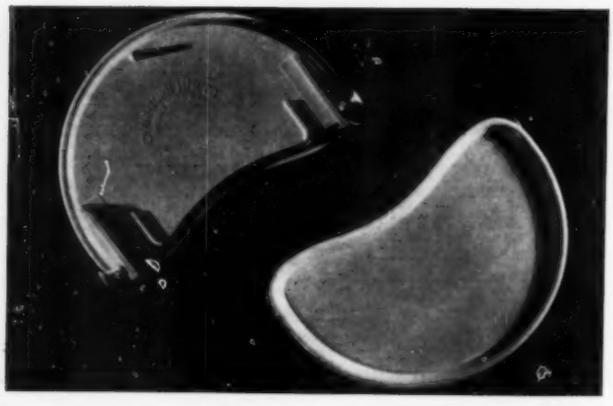
The knobs on the cabinet are of a cellulose acetate material to permit stamping, and because they are both strong and luminous. One of the knobs is really an indicator showing a subdued glow of light when the current is on.

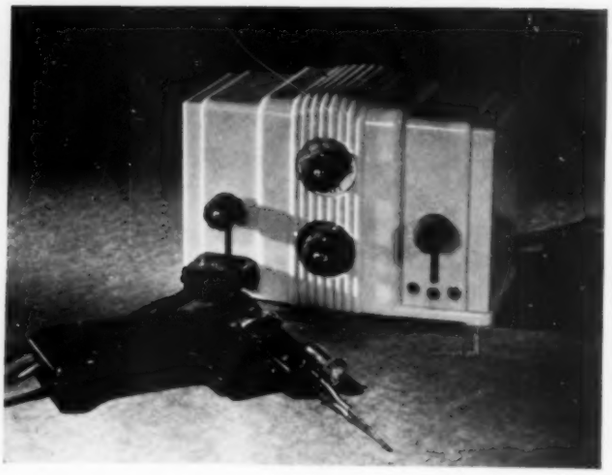
"It has become increasingly evident," says H. S. Rubens, design-engineer for (*Continued on page 56*)

PLASKON

HIGH CHAIR TRAY:

A nice bit of molding merits a "first mention." That's why we purposely show the underside of the molded tray for Chair Town Company's new high chair. The guide rests thereon, and the neat spring action pin hinges which hold the piece securely in position, are satisfying examples of molding precision and Plaskon moldability. Just as smooth and sanitary as these parts is the wide (17 x 10 inches) tray surface—which offers junior a comfortable expanse on which to forage. Molded by Northern Industrial Chemical in Boston, Massachusetts.





MACHINE HOUSING:

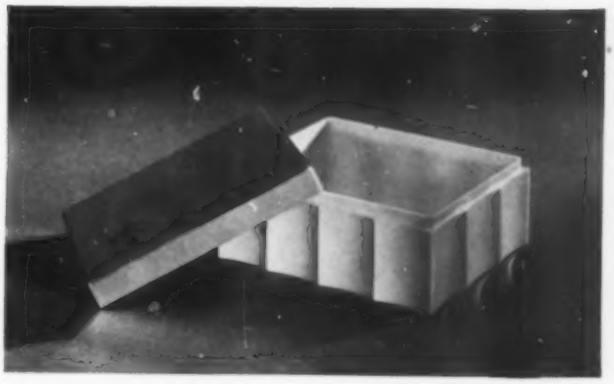
Compare this simple, good-looking electric cautery machine with most pieces of electro-medical equipment—and you'll understand why the Comprex Oscillator Corporation reports mounting sales on their Plaskon-housed machine. Before improved design and Plaskon—molded-color—simplified and beautified it, it was capable of striking dread into the most thick-skinned patient. Now, in every way better fitted for delicate surgery, it allays patients' fears, is smartening up many a doctor's office. Being Plaskon, it has permanent color, insulative strength, and the smooth, sanitary surface indispensable to the doctor's office. The housing is made in various pastel shades of Plaskon, ivory predominating; the pistol grip in black Bakelite. Molded by Boonton Molding Company, Boonton, New Jersey.

MOLDED COLOR

AUGUST 1935

YARN GIRL:

Just as diamonds were created by a tremendous pressure, so the yarn girl came into being because of the weight of public demand. All the ladies (and not a few he-men) in the last few years have been crocheting; and after a while the age-old practise of letting the ball of thread roll around the floor began to irritate them. So the demand arose, and the yarn girl was created to meet it. She's a hollow globe in two sections, with weighted Durez base and an opening in the top for the thread to run through. You put the ball of crochet thread inside—and there it stays, neat and clean, and emerging just as fast or as slowly as needed. Being also a decorative item, lovely on her own account, the yarn girl is made of Plaskon in rich pastels. Tech Art in Long Island City molded her.



POWDER BOX:

To the countless Plaskon cosmetic packages is added this new powder box by Chase Brass and Copper. Colorfully beautiful, resistant to every element that "stales" face powder, the Plaskon container has both style appeal and serviceability. In this instance, the fluted plastic base complements the satin finish copper top. Together they offer an attractive box for cigarettes or odds and ends when the original use is satisfied. Molded by Plastic Molding Company in Sandy Hook, Connecticut.

TOLEDO
SYNTHETIC
PRODUCTS
INCORPORATED
TOLEDO · OHIO

New things this Month

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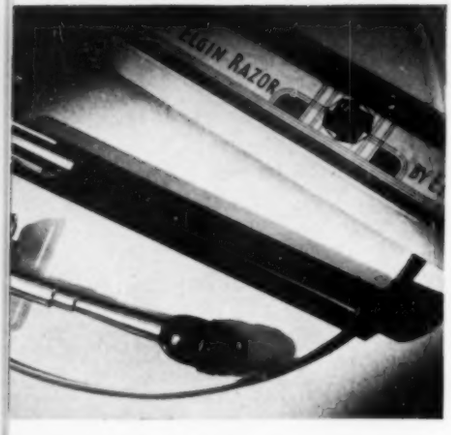

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1 A new midget camera, larger and less toy-like than the original molded midgets, has recently been announced by the Varsity Camera Corporation of New York. Molded in three pieces of black Durez, the camera is ovoid in shape and opens from the side. It features a removable cylindrical lens cover in front and provision for a spare roll of film inside. Molded by Northern Industrial Chemical Company. Photo, courtesy Durez General Plastics

2 The new Elgin razor, made by the Elgin American Company, Elgin, Ill., is one of the most interesting innovations in razor construction that has come along in years. Weighing next to nothing, it eliminates "razor cramp." Being small, it gets into those tough crevices that play havoc with the morning shave. Its molded phenolic handle insures a comfortable grip and it packs in a black enameled tube, with phenolic ends, no larger than a fountain pen. Photo, courtesy of Bakelite Corp.

3 The adaptability of plastics for men's toiletries is demonstrated forcibly by these illustrations of English-made shaving accessories. A mottled brown Bakelite molded is employed for the handle of the Shard razor because of its lightness in weight and permanent finish. In addition the case and blade receptacle are made from this same material.

4 The newest model of the Gem Micromatic Razor was introduced by the American Safety Razor Company last month in a nation wide sales promotion and advertising campaign. In place of the traditional box the new razor is encased in an attractive Bakelite molded container in mottled green. A separate molded receptacle is also supplied for dull blades. Photo, courtesy of Bakelite Corp.

5-6 The Englishman finds that his shaving soaps are now packaged in attractive molded containers. Note particularly the modern version of the shaving soap bowl for Bronnley's Viotto de Luxe. Photos, courtesy of Bakelite Corp.

7 This is the yarn girl which the nation's knitters (and crocheters) have taken to their hearts as a means of keeping the ball from rolling. The hollow globe, made in six pastel shades of Plaskon, is in two sections with an opening in the top for the thread to run through. The weighted base is black Durez. Photo, courtesy of Toledo Synthetic Products, makers of Plaskon.

8 Metal and plastic meet once again to complement each other in this new powder box which Chase Brass and Copper has made for United Drug Co. The top is of burnished copper. The fluted base is made in several colors of Plaskon. Photo, courtesy of Toledo Synthetic Products Inc.

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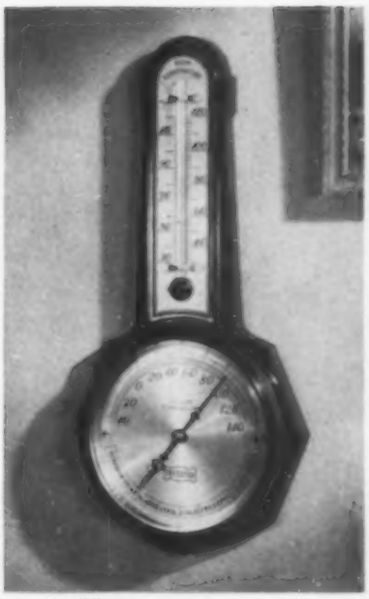

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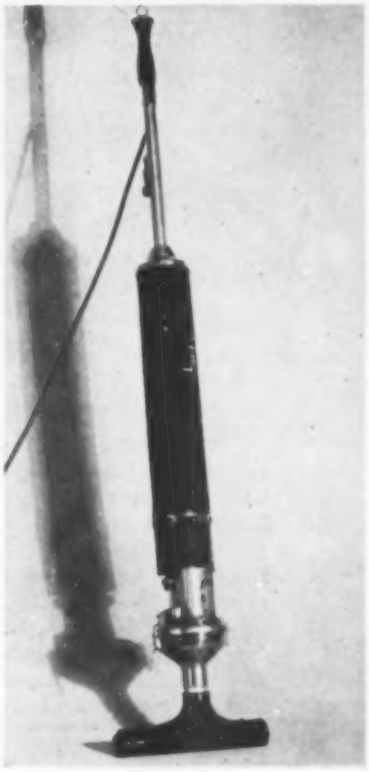

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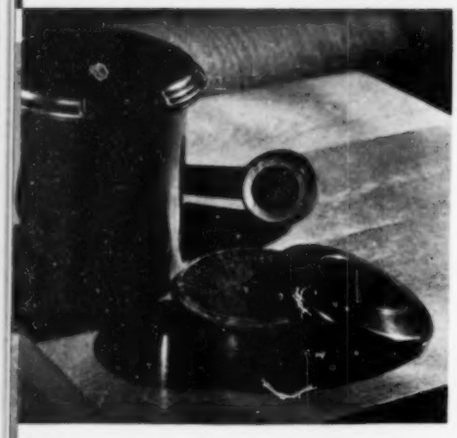
9 The modern version of the "canape tray" has been created by The Specialty Guild, Inc., Convent, N. J., in these two-tier tidbit plates. Beautiful cast resinoid in red or green supplants metal for the handle and upper plate support. Newland Schneeloch & Piek, New York City, have been appointed distributors. Photo, courtesy of Bakelite Corp.

10 Although only an inch and one-half in diameter, the new Midget Flower Anchor will hold a dozen roses. It is being made by the Specialty Guild, Inc., Convent, N. J., of opaline, Bakelite cast resinoid and is equipped with a rubber suction disk to anchor it securely in a flower bowl. Photo, courtesy of Bakelite Corp.

11 The temperature outside is told on the inside by the newest type thermometer. The Indoor and Outdoor Thermometer, made by Moto Meter Gauge & Equipment Corporation, Toledo, Ohio, contains two thermometers—one to register room temperature, the other to indicate temperature outdoors. The latter reading is made possible by a special wiring attachment which may be unobtrusively placed outside the window. The new instrument is housed in a case of Bakelite molded. Photo, courtesy of Bakelite Corp.

12 Dirt disposal is easy with the new Electrikbroom, made by the Electric Broom Corporation, New York. Built on vacuum cleaner principle, this novel home appliance does not have an unwieldy bag to be emptied. Instead, it has a Bakelite molded cup which empties like an ash tray. The dirt cup is entirely separate and distinct from the flow of air, and therefore, the accumulation of dirt does not lessen the efficiency of the cleaner. This is not the only unique feature of the Electrikbroom. It is very light in weight—only 6 pounds and, when not in use, the cleaner may be hung on a hook, eliminating the storage problem of the average vacuum cleaner. It cleans hard surfaces, such as wood floors, polished floors, linoleum, tile, cork and brick, by the insertion of brushes into the floor nozzle. Furniture is immune to damage by the Electrikbroom, due to the flexible nozzle made of automobile tire rubber over a Wallace-Barnes spring. Photo, courtesy of Bakelite Corp.

New things this Month



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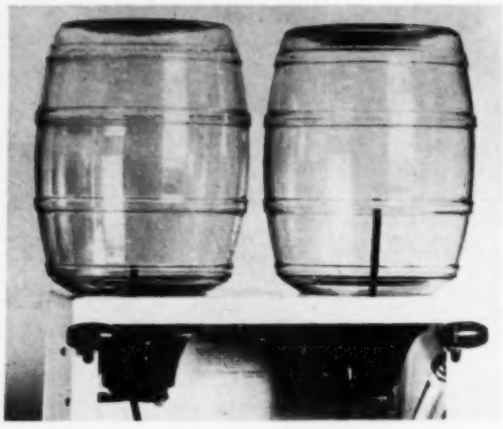

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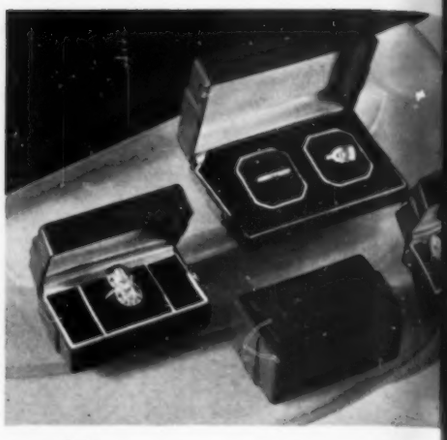

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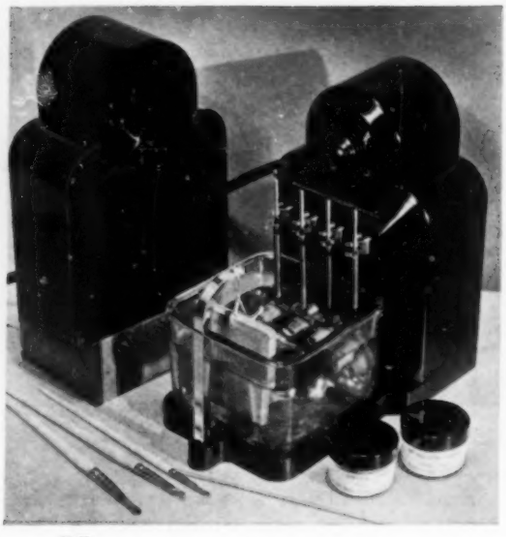

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13 The comforts of Sherlock Holmes would have been greatly augmented with these modern tobacco humidors. English manufacturers are producing them in mottled walnut Bakelite molded with cover to match. Photo, courtesy of Bakelite Corp.

14 Treitel-Gratz Co., Inc., New York City, introduced this collapsible table designed by Francis Cushing Hall. The folding base is of substantial aluminum with satin finish, and supports a reversible tray of laminated Formica with an aluminum frame to match the base. The table top may be black or white at will by simply reversing the tray. Combinations of light blue and yellow or red are also available. Laminated Formica makes it resistant to stains and burns.

15 The Sanitary Display Vending Machine for viscous foods offers delicatessens and food retailers the double advantage of being a displayer and dispenser. It is being distributed by the Sanitari Dispenser Company, Seattle, Washington, for mayonnaise, peanut butter, marmalade, jams and the like. The sanitary dispensing head is made in one piece of mottled Bakelite molded. When not in service the contents of the glass jar may be sealed tightly with a Bakelite molded closure.

16 A new Junior model Electroformer, smaller companion of the Senior Electroformer shown in these pages recently, has recently been announced by Hanau Engineering Company of Buffalo. The new smaller machine is comprised of a one-piece molded Durez housing in lustrous black, which fits into a molded Durez tray along with the plating bath. The molded housing was chosen for its light weight and its resistance to splashing of acid. Molded by Norton Laboratories. Photo, courtesy of General Plastics, Inc.

17 Fine jewelry deserves a rich setting, so the Rathbun Manufacturing Company has created a new plastic jewel case for the Electric City Box Company, Buffalo, N. Y. A special spring hinge construction provides a smooth outside with no objectionable projections. No hasps or stops are necessary for the opening and closing of the case. The box, in varying sizes, is made of rich red Bakelite molded.

18 Originally designed by the Guaranteed Parts Company for use by mechanics, this Spot-O-Lite is finding wide adaptation among physicians and dentists. Molded by the General Products Corp., of brown Bakelite.

Redesign Zooms Sales

by N. S. Stoddard

GENERAL ELECTRIC COMPANY

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4

- 1—The "Valet Presser" is equally useful on men's or women's wear. It presses sleeves, collars, ties, pants, pleats and hems with a sharp, clean-cut crease like that of a heavy iron
- 2—The original design which failed to attract sales
- 3—The new design which tripled sales
- 4—"Valet" is grand for a "hurry up" job. Clothing needn't be removed

UP IN Lake Mills, Wisconsin, Modern Specialties, Inc., is firmly convinced now that redesigning is a sure way to increase sales. This company manufactures, among other things, an electrical device called a "Valet Presser" which is pictured here in its redesigned state. The two halves of the case are molded phenolic with either a mahogany or black finish. Inserted in the center of each half is a flat, velvet-finish, cast aluminum plate with an electrical heating element embedded. It is a sturdy, exceptionally well-made device that quickly presses pants, sleeves, lapels, or collars on men's garments without even removing them; and is equally useful in pressing pleats, hems, etc., on women's wear without the aid of an ironing board or auxiliary equipment.

Modern Specialties first introduced the "Valet" a little over a year ago. They were sure they had a merchandising "natural." They were certain, too, that the product was durable and well made. Its convenience to those who travel or live in quarters inaccessible to a good tailor were obvious. It promised every indication of immediate volume sales, but soon after the presser was introduced they realized something was wrong. Something prevented its ready acceptance and sales were considerably below expectations.

They submitted their problem to General Electric, who upon investigating, found there was nothing wrong with the "Valet" except its physical appearance. It lacked selling appeal. Its design was not in keeping with the delicate nature of the service it was created to perform. It lacked that intangible something that would make people say: "I want one of those." General Electric submitted a smarter, more modern design for the molded casings which was accepted by

(*Continued on page 63*)

New ideas

● Fluorescent screens, X-ray screens, any artificial glass screens for use in radiotherapy can now be made from a new artificial glass which comprises a phenolic resin made with the aid of a mixture of cinnamic and benzoic acids. A synthetic balsam is first obtained; this is compounded with the required fluorescent or radioactive or other substances which impart to the final product the properties needed for the intended use. Screens or sheets of the synthetic balsam, without special ingredients for therapeutic use, can also be successfully employed as the interlayer in safety glass. (Louis C. F. Pechin, French Patent 779,730.)

● Gas bubbles, appearing in transparent or translucent thermoplastics, present a serious difficulty in maintaining high quality in finished products. Some of the polyvinyl ester thermoplastics are particularly susceptible to bubble formation; but it has now been found that deaeration is effectively accomplished by heating a block of the resin in an autoclave under a layer of castor oil or other inert liquid, allowing the autoclave to cool slowly, and then releasing the pressure. The bubbles come to the surface of the block, where they can be shaved off if they do not escape entirely. (Imperial Chemical Industries, Ltd., German Patent 614,053.)

● By a new procedure in effecting the resin condensation, molding compositions of the aniline-formaldehyde type are produced in a soluble, hardenable stage which is exceptionally well adapted to the production of molded insulation, for which the aniline resins are much superior to the phenolic resins by reason of their excellent electrical properties. The final molded product is hard, insoluble and infusible. (Allgemeine Elektricitäts-Gesellschat, German Patent 609,729.)

● Molding powders which permit rapid molding and ready removal from the molds while hot (even in moldings of complicated design), giving products which are bubble-free and very hard, comprise resins of the urea-formaldehyde type. These resins differ from the usual urea molding powders in that they are made both with formaldehyde and with hexamethylenetetramine, instead of considering either one of these compounds to be a sufficient source of the needed methylene groups. By sheeting the new material, instead of making it into molding powders, a very satisfactory organic glass is obtained. (Wilhelm Kraus, French Patent 777, 663.)

● Cheap molded insulation is successfully produced by exhaustive chlorination of the wastes which accumulate in the refining of crude anthracene. The degree of chlorination is adapted to the nature of the desired product, whether insulating varnish, asphalt paint or a hard, plastic material with good electrical properties, which is used for making molded insulation. (Verein für chemische und metallurgische Produktion in Aussig, German Patent 610,099.)

● Flooring or paving blocks, which can be colored as desired, are made from a blend of chlorinated rubber and rosin (or ester gum or a like resin ester) with a colorless or nearly colorless high boiling distillate from bituminous materials. This material may include a coumarone resin. The blended plastic material is excellently adapted for making flooring or paving compositions. (Naamlooze Vennootschap tot Voortzetting der Zaken van Pieter Schoen en Zoon, French Patent 777,872.)

● Starch has sometimes been used in making plastics for cheap articles, such as molded doll heads; but brittleness in the final product was a serious obstacle to successful use of the material, because treatments which would overcome the softness of the initial reaction product invariably gave a hard, brittle final material. Zinc chloride, the usual reagent for making the plastic from starch, is effective and inexpensive and so a means of controlling its action was sought, rather than a new reagent. Such a means was found in the simple expedient of adding common salt to the zinc chloride; or ammonium chloride serves the same purpose. Still better control is achieved if sodium borate is also added; this serves to give a final hardening effect without embrittlement, so that the molded article is adequately but not excessively hard, and is tough and durable. Thus doll heads can be made which, for the ordinary hazards of usage, may be considered unbreakable. (Societe Anonyme des Anciens Etablissements Siegel & Stockmann Reunis, French Patent 780,285.)

● A German maker of mechanical refrigerators supplied this salesmen with small molded models which illustrated in a raised drawing the working of a part about which salesmen received many inquiries. The models had one moving part, in a different colored plastic from the rest of the model; its motion was controlled by a knob on the back. These attractive little models not only held customer attention much better than previous models made of pulp, but they also refused to wear out even with long and frequent handling. (*Kunstoffe*, July, p. 177.)

● Cellulose acetate containers for food products, cosmetics and other specialty goods are now successfully made from an acetone solution of cellulose acetate, which is shaped on suitable forms, dried, and stripped from the form. There is no shrinkage after taking the hollow shape from the form; thus the top and bottom of a container can be made on separate forms and they will fit perfectly. The new containers are waterproof and almost unbreakable; as a special advantage, they have absolutely no effect on the odor or flavor of any product, even the most sensitive. (Dr. Bratring, *Papier-Zeitung*, 1935, p. 472.)

● To produce extremely fine threads, such as are needed in making line screens for color photography, thin plates which may be stamped from celluloid or a like material are fitted with holes and grooves in proper size and space relation, and a number of these plates are firmly fastened together in a block in which the holes and grooves form channels and slots serving for extrusion of the different colored solutions to form the very fine threads in the colors needed. A block formed in this way from celluloid or other suitable plastic provides a very efficient nozzle for making the threads for a line screen. (A. Schwarz, British Patent 426,-763.)

● Even plaster casts can benefit from the hardening, toughening and waterproofing influence of synthetic resins. In a new method for improving the setting and the final properties of plaster casts, the plaster material is impregnated with an aqueous solution of the phenol and formaldehyde necessary for making a phenolic resin, or with a solution of a soluble initial condensation product which has not yet reached the resinous stage. Formation of the resin is completed by heating at 100° C. Casts thus made are tough, can be stained, and will take a high polish. (B. Szeps, British Patent 425,742.)

Keeping posted

Arthur E. Wells Heads Beetleware

Arthur E. Wells has been appointed manager of the Beetleware Division of the American Cyanamid Company replacing R. S. Childs who resigned from that position on June 22, in order that he might devote his entire time to the Lederle Laboratories division of the same company.

Mr. Wells comes to the Beetleware division from the Development Committee of the Cyanamid Company where his work with Dr. W. S. Landis and Dr. M. C. Whitaker, the other members of the Committee, is well-known. Mr. Wells was previously engaged in the developments of the plant and operations at Corpus Christi, Texas, by the Southern Alkali Corporation—jointly owned by American Cyanamid Company and Pittsburgh Plate Glass Company. He will remain a member of the Development Committee, but will devote most of his time and effort to the Beetleware division of the company.

G. E. Vice-President Retires

The retirement of John G. Barry, senior vice-president of the General Electric Company, after more than 45 years of service, and his election to an honorary vice-presidency, was announced by President Gerard Swope following the meeting of the board of directors held in New York on June 28. Mr. Barry, as active head of the apparatus sales organization, has for many years formulated and executed the company's policy and sales program in the apparatus field. He will maintain an office in Schenectady and will be available for consultation. The retirement was effective as of July 1, 1935.

McConnell Now with Patterson

W. M. McConnell has joined the Engineering Department of The Patterson Foundry & Machine Company to take charge of the drafting room.

Mr. McConnell graduated from Carnegie Institute of Technology with a B.S. in Chemical Engineering. He also has a professional degree of Chemical Engineer and completed his studies at Columbia University in special courses. Mr. McConnell gained considerable experience in the handling of process equipment and plant design while connected with the Koppers Company and the American Cyanamid & Chemical Corporation, and brings another type of specialized experience to the rapidly growing engineering and experimental department of Pattersons.

Oris Appoints Clark

Ralph S. Clark, 2222 Harriet Avenue South, Minneapolis, Minn., has been appointed to handle sales in the mid-western territory for the Oris Manufacturing Co., Thomaston, Conn., custom molders and insulation manufacturers.

Juliet De Hart Kurz

The passing of Mrs. Juliet Kurz, Sales Manager of Kurz-Kasch Company, Dayton, Ohio, is a distinct loss not only to the community in which she lived and to the Company with which she was actively associated, but to the entire plastic industry in which she was so enthusiastically engaged. There is genuine sadness in

the hearts of those who knew her, and a sense of personal loss in the absence of her frank and genial nature.

Mrs. Kurz was born at Lafayette, Indiana, and received her education in that State. She was married in Lafayette to Chris A. Kurz, Jr., and in 1910, Mr. and Mrs. Kurz established the Commercial Testing Laboratory in Dayton. Together, they pioneered in the developing of oxygen and hydrogen, organizing the Dayton Oxygen & Hydrogen Products Company in 1913. Later, in 1916, they started in the molding business under the firm name of the Dayton Insulating Die Company. In 1921, Henry J. Kasch became associated with their organization and the present firm name of Kurz-Kasch Company was adopted. Mrs. Kurz held the office of Secretary of the Company until 1932 when she was appointed Sales Manager, which position she held at the time of her sudden death. She had made a business trip to Cincinnati on Saturday, July 20, complaining of being terribly tired upon her return. Shortly afterward, she died. Besides her husband, she is survived by a daughter, Ruth Mary; a son, John; her mother and a brother, both of Lafayette, Ind.

Keeping posted

Dr. Payne Now with Atlas

The Atlas Mineral Products Company has announced that Dr. C. R. Payne joined its technical and sales staff at Mertztown, Pa., on June 1. Dr. Payne received his M.S. degree in physical chemistry from the University of Kansas in 1928, and was awarded the Ph.D. degree in organic chemistry from the University of Pittsburgh in 1931. From 1928 until he entered the Atlas organization he was on the research staff of the Mellon Institute of Industrial Research. During this time he developed several processes for the refining of petroleum products. More recently he has been engaged in the development of novel plastic sulphur compounds or cements. Investigations of the chemical resistance and physical properties of these compounds show that they are resistant to acids and other corrosive chemicals, and can be used as bonding agents not only in the construction of acid vats and floors but also as protective coatings for acid-proof structures and as jointing compounds for bell-and-spigot pipe. The production of these compounds by The Atlas Mineral Products Company will be under the supervision of Dr. Payne, whose services and technical advice will be available to engineers and industrialists encountering manufacturing difficulties owing to corrosion by acid fumes, acids, or other chemicals.

Alan S. Cole a Vice-President

Alan S. Cole, general manager of Breskin and Charlton Publishing Corporation (MODERN PLASTICS—MODERN PACKAGING—PACKAGING CATALOG), was recently elected a vice-president of that organization. Mr. Cole was formerly western manager of the corporation, becoming general manager and returning to the New York office about a year ago. He will continue with his work as general manager.

Catalin Corporation Wins Patent Suit

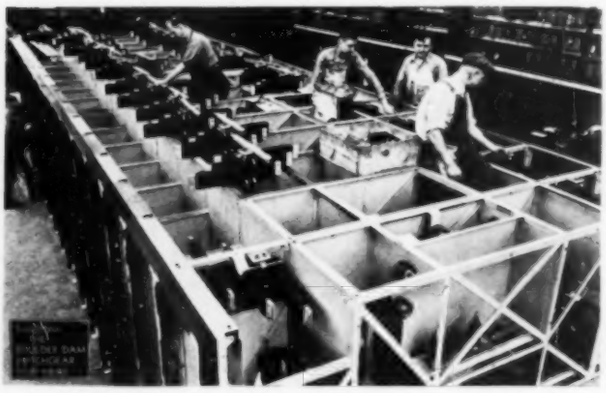
In the suit of the Catalin Corporation of America against the Catalazuli Manufacturing Company which was pending for a considerable time and wherein the Catalin Corp. charged the defendant with infringement of its patents, the following action took place July 20, 1935.

Federal Judge Galston in the United States District Court for the Eastern District of New York broadly held all patent claims valid and infringed by the defendant.

The patent involved in this suit was United States Patent No. 1,854,600.

The Catalin Corporation manufactures cast phenolic resins well known under their trade names Catalin and Prystal.

Outside of the above mentioned patent, the company owns and controls a considerable number of additional patents covering the manufacturing process of its various products.



Laminated and Molded Phenolics Insulate Bus Sections of Boulder Dam Switch Gear

Thirty oil-blast circuit breakers in two parallel rows are arranged back to back and mounted on a steel framework. Each pair of breakers, appurtenances and accessories form a switching unit. Lamphenite insulated three-phase busses extending full length of the structure provide for future extension at both ends. Switching equipment connections are from the bottom.

The oil-blast disconnecting type breakers have self-contained mechanisms for removing each breaker from operating to disconnected or test position. They can be removed by a combination transfer truck and test rack for maintenance, repairs or adjustments. Metering equipment, relays, indicating lamps and test terminals for each pair of breakers mount on panels on one side of the enclosing structure. Test control buttons are adjacent to breakers they control.

The Delta-Star Electric Company, Chicago, are now building this high voltage Metal-Clad Switch-Gear for installation in the huge Boulder Dam power house on the Colorado River.

It will control and "keep its fingers on the pulse," so to speak, of the motor driven auxiliaries handling the station lighting, intake power, spillway, elevators, oil handling and pump equipment for lubrication of machines. In addition, there is battery charging, ventilation, transformer and generator cooling, cranes and cable ways together with electric and water service to Boulder City where some several thousand construction men live.

STALATOR
OF RED
NSPARENT
ENITE
LDED BY
ENERAL
DUSTRIES
OMPANY

TENITE

provides transparency without brittleness, in this new moth-proofing crystal vaporizer on the Scott and Fetzer vacuum cleaner. The non-breakable character of Tenite is indicated by the rows of punched holes in the crystalator. . . . Tenite is a superior thermoplastic, obtainable in opaque as well as transparent forms, and in all colors, plain and variegated. Send today for samples and booklet on Tenite uses.

TENNESSEE EASTMAN CORPORATION (*Subsidiary of the Eastman Kodak Company*), **KINGSPORT, TENN.**

Keeping posted

The switchgear embodies the latest engineering practices. It is equipped with automatic safety devices to guard against service interruptions and completely enclosed in steel to eliminate hazards to operators in the plant.

The 2000 ampere bus sections, being mounted on the top compartments, are enclosed in wrapped laminated paper insulation coated with phenolic varnish, then solidly pressed and cured in heated molds. This insulating method eliminates voids, looseness, warps and cracks.

The joints between bus sections will be covered by molded splice boxes arranged for filling with insulating compound as required.

The circuit breaker high voltage bushings are also made of the same phenolic material used for the busses. Electrically, this material is equal to porcelain and its high dielectric and mechanical characteristics make it very desirable for switchgear assemblies.

September Premium Exposition

The Atlantic Coast Premium Buyers' Exposition, sponsored by Premium Advertising Association of America, Inc., will be held concurrently with their semi-annual convention at the Pennsylvania Hotel, New York City, September 23–27, inclusive.

The timely opportunity offered by this Exposition is two-fold. First, those buyers of premiums from Eastern States, who use premiums in such vast quantities and are forever on the lookout for that which is new, can save their time by viewing the vast displays under one roof. Secondly, molders and fabricators can find no more opportune time to display the results of their ingenuity in molded premiums than at this exposition.

New Durez Material for Office Machine Cases

A new Durez phenolic molding material for larger moldings of the de luxe type has recently been announced by General Plastics, Inc. Known as 2260 K Black, the new material has a higher than average impact strength and is being used on applications where the finest types of moldings are desired. Its impact strength is approximately $33^1/_3\%$ greater than the general run of phenolic molding compounds. Because of this, and because of the excellent finish obtained, it is finding applications for instrument cases, adding machine housings, typewriter parts, boxes and containers to withstand rough usage, as well as many decorative parts and products. It has a compressive strength of 29,000 PSI, a heat resistance of 400° F. and weighs 22.2 grams per cubic inch.

New Airport Equipment

A new airport boundary light has been developed by Air-Ways Equipment Corporation, Milwaukee, Wisconsin. This device was invented by Frank Czapiewski, veteran pilot, originally for use on the majority of the 10,000 new airports built under the P.W.A. at points not having electric current.

Laminated phenolics have been employed in the construction of the marker because of their ability to withstand extensive exposure to the elements. Some of the boundary lights are yellow Bakelite laminated, while others are green, depending upon their position in the field.

The new marker has a bulb illuminated by a single dry cell. A highly reflective tap develops a maximum illuminating efficiency. It is reported that the light is visible from the sky for a distance of five miles. Another unusual feature is that the boundary light has been designed so that it will break loose from its base if struck by a plane.

Another device which has been developed by Air-Ways Equipment Corporation is a wind direction indicator, called the Radi-Cone. This, also, is constructed of Bakelite laminated, and is battery operated. The nose of the Radi-Cone is bright red Bakelite laminated, and the body is yellow.

Kurz-Kasch Co., Opens Detroit Office

Kurz-Kasch Co. of Dayton, Ohio, has opened a branch office at 744 New Center Building, Detroit, Mich. Mr. F. W. Murray, sales representative will make his headquarters at this new office.

ALREADY NOTED FOR COLOR CONTROL

Color is the big problem with cast resin. Fiberlon, produced by the largest company in the plastic field with a half century of experience to draw on, solves it to the user's complete satisfaction. It can be furnished in any desired color, old or new, and with faithful commercial match on repeat orders.

In sheets, rods, tubes or cast to special shapes to meet unusual requirements. Our engineers welcome inquiries.

THE FIBERLOID CORPORATION · INDIAN ORCHARD, MASS.

FIBERLOID

Literature

GERMAN YEAR BOOK FOR THE PLASTIC MATERIAL INDUSTRY

Published by Wilhelm Ransegrau
Keller Publ. Co., American Representative, Price ($5.40)
Edited by C. Stark

This year book of the progress of plastics in Germany contains 300 pages of interesting material for chemists, engineers, technicians and those closely allied to the production of plastic materials and their fabrication. It is printed in the German language, and is well illustrated with photographs of machinery, tables, and charts.

The first chapter deals with artificial plastic materials—raw materials of animal and plant origin, artificial horn, nitrocellulose, phenol-formaldehyde, viscose, and many other such compositions.

The second division of the book treats with the manufacture of different qualities of plastic containing the processing methods in use in Germany at this time.

Then it goes on to take up trade marks, register of patents, the new developments in machines and apparatus for plastic fabrication as well as lists of names of consumers, literature, authors, and tables.

The book will be sent prepaid upon receipt of the list price of $5.40. Address Circulation Dept., Modern Plastics.

CHEMICAL GUIDE-BOOK

Published by Chemical Markets, Inc.
Price ($2.00)

The eleventh edition of the Chemical Guide-Book contains data on approximately 150 chemicals not heretofore included, but for which important industrial uses have been found. In this group, solvents and plasticizers predominate.

More than 100 pages have been added to this new edition bringing the total to more than 300 pages.

The book is divided into four parts. First is a catalog of leading chemical firms in the U. S. with their products listed alphabetically. Part two is a buying guide and directory of chemical and allied products arranged alphabetically. The chemical and physical properties, uses, grades, containers, shipping regulations and, in most cases, the tariff rate is given, followed directly by a complete list of suppliers of each of the 1500 items listed. All synonyms have been included and the book is thoroughly cross indexed.

Part three is a geographical listing of nearly 3500 firms, suppliers of the 1500 chemicals and allied products contained in Part two.

Part four gives the high and low prices for approximately 1500 chemicals for the years 1933 and 1934. There is also a complete list of trade and technical associations with the secretary's name and address.

It is quite the most complete guide for the chemical industry we have ever seen.

Interested in "Diatoms"?

The Power Specialist, business publication of Johns-Manville Corporation, published bi-monthly, covers the field of insulation and roofing in rather a thorough manner. It is well written, interesting, and splendidly printed and should prove profitable reading to those within the scope of its field. The May-June issue carries an interesting account of the new Hayden Planetarium of the American Museum of Natural History wherein men may sit after it is completed late this summer and gaze into the heavens and with the aid of a giant Zeiss projector, become eye witnesses to the doings of Celestial bodies.

Another article, "Diatoms and Celite," resulting from exhaustive research in the Johns-Manville laboratories, tells the interesting history of that amazing vegetable organism known as the diatom, which now figures in one way or another in practically every field of industrial operation. We are told by Mr. Howard W. Allen, editor, that it is one of the most popular articles they have ever published.

The Technician Needs a Niblick

This is the title of a most attractively presented eight-page folder with transparent cellulose cover recently issued by the R. B. H. Lacquer Base Co., which claims that the lacquer enamel business, like golf, has its sand traps and roughs. Then it sets out to show how R. B. H. Lacquer helps technicians get out of the rough and better their scores. We quote from a letter, signed by Mr. H. J. Hemmingway, president, which came with the booklet:

"Of course, there is a reason behind this effectiveness of R. B. H. Bases. We are niblick specialists, manufacturers of pigment dispersions only, and the results of our efforts are exclusively for the benefit of our customers."

Chemicals by Glyco

Glyco Products Company has recently issued a new revised catalog containing valuable information and formulæ on emulsions, polishes, abrasives, disinfectants, bronze lacquers, synthetic resins and waxes, adhesives, etching pastes, cutting and spraying oils, soluble oils, etc. In addition, the catalog contains chemical tables readily accessible which the chemist and technical worker will find indispensable.

Materials, equipment and methods used in the fabrication of

PLASTIC PRODUCTS

Here is a book explaining in detail how plastic materials are molded. Constitutes a complete, practical manual of up-to-date information needed both by the user and manufacturer of plastic products.

Plastic Molding

by **LOUIS F. RAHM**

Assistant Professor of Mechanical Engineering, Princeton University

246 pages, 6 x 9, illustrated, $3.00
Plus 25¢ postage.

THIS book describes the molding process and the characteristics of plastic materials. It takes up in detail the types and uses of molds, their style, general design details, the hobbing process. Then it gives definite information on operating equipment and discusses the selection of equipment and the layout of the molding plant. It includes careful suggestions on maintenance and operation of equipment.

If you are a manufacturer, you will get from this book help on all sorts of plastic molding problems. You will secure a manual of best methods.

If you are a user of plastic products, you will get from this book priceless suggestions for the more efficient selection and adaptation of these products.

The author has had wide practical experience through his connection with Du Pont Viscoloid Company and the Burroughs Company. Under the Robert Stewart Brooks Fellowship at Princeton, he made a survey of the methods and equipment of the leading molding plants in the country. His book is an authoritative manual for the entire plastic molding industry—the first to be devoted exclusively to molding processes, equipment and methods.

CONTENTS:

I—The Molding Process and the Plastics.
The Molding Process. The Plastics.

II—Molds.
Types and Uses. Style. General Design Details. Special Details. Die Hobbing.

III—Operating Equipment.
Molding Presses. Accessory Equipment.

IV—The Molding Plant.
Plant Equipment.

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MODERN PLASTICS
425 FOURTH AVE. NEW YORK CITY

LOGEMANN

High Speed
Positive Pressure
Close-coupled

Molding Presses

For maximum production, LOGEMANN high-speed molding presses are unequalled. Quick closing and opening produce high output, without lost time or unnecessary motions.

Full pressure can be positively maintained during "curing." This eliminates spoilage through decreased pressure, and insures pieces that pass the most rigid inspection.

With built-in pump and fluid tank, unit is entirely self-contained. Its compact, close-coupled appearance appeals particularly to users requiring multiple units, but limited as to space.

LOGEMANN BROTHERS CO.
3158 W. Burleigh St. MILWAUKEE, WIS.

PLASTICIZERS, SOLVENTS
and RAW MATERIALS

For the Manufacturer of

PLASTICS, LACQUERS—and COATINGS

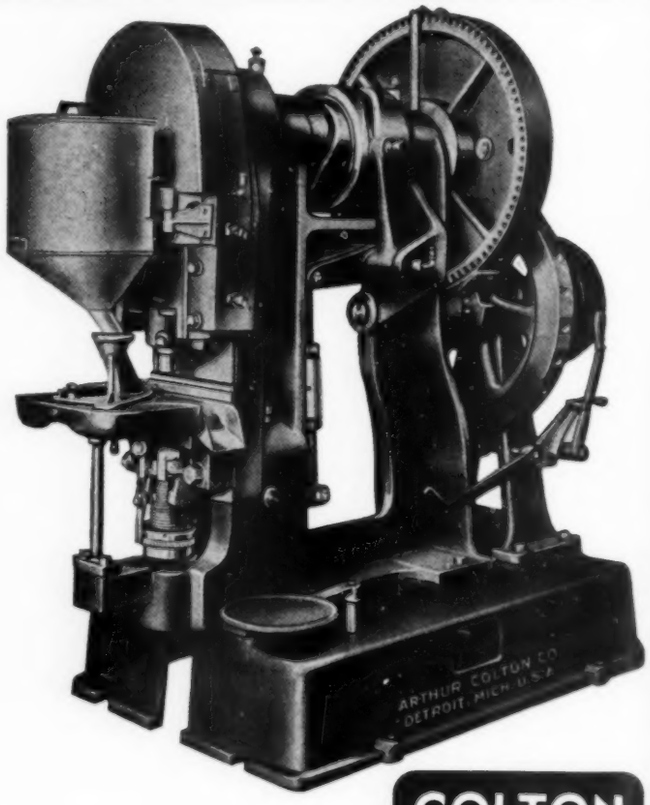
CASEIN
TRIACETIN
CELLULOSE ACETATE
ACETIC ANHYDRIDE
DIBUTYL PHTHALATE
DIETHYL PHTHALATE
DIMETHYL PHTHALATE
CRESYLIC ACID

AMERICAN-BRITISH
CHEMICAL SUPPLIES, Inc.
180 MADISON AVE., NEW YORK, N. Y.

COLTON Preforming Machines have won wide usage because of their inherent sturdiness, their uniform, speedy and satisfactory performance.

Note the new, improved 5½ Tablet Machine shown at right. The solid steel frame insures perfect operation; the improved die fasteners, improved cam construction, heavier ejecting arm brackets and vanadium steel plunger make possible high speeds without fear of breakdown or lowered quality. In every particular, we believe, this machine is by far the finest the market has to offer.

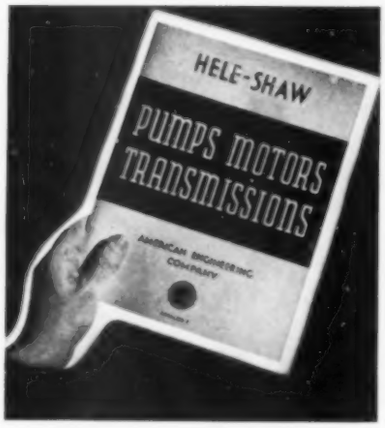
The 5½ Tablet Machine makes tablets up to 3″ in diameter and having a fill depth of 2⅛″. Other Colton Preforming Machines—single punch, multiple and rotary—are likewise outstanding in construction and performance. Write for literature on these machines or have our engineers visit your plant—



ARTHUR COLTON CO.
DETROIT, MICHIGAN

COLTON
DETROIT

American Engineering Company Catalog Revives Hydraulic Drives with "Fluid Power"



A pump is a machine or "apparatus," to quote the dictionary, for "raising, driving, exhausting or compressing fluids" and there are hundreds of "pumps" on the market which do just that. The Hele-Shaw pump, on the other hand, belongs to a special class designed to furnish high pressure energy which can be translated into variable, reversible linear motion through a ram, or variable reversible rotary motion through a hydraulic motor. To overcome the disadvantages of traditional nomenclature was one of the problems which the American Engineering Company of Philadelphia had to face in preparing a new catalog for its Hele-Shaw pumps, motors and transmissions.

This was solved by creating the term Hele-Shaw *FLUID POWER* to differentiate the Hele-Shaw pump from a legion of pumps with which it has little in common.

As *FLUID POWER*, hydraulic power loses some of its mystery and becomes understandable—especially when, as in this catalog, its resemblance to electric power is carefully drawn. It dawns on one that the use of *FLUID POWER* is not restricted to hydraulic presses but is capable of spreading to a host of new applications in need of a flexible, controllable source of energy.

The operation of the Hele-Shaw pump has been reduced to simple diagrams and copy, probably the first lucid record of the behavior of a pump of this type on suction and discharge strokes and the effect produced by "stroking."

The Hele-Shaw catalog is 44 pages and contains over a hundred illustrations, charts, tables, drawings and engineering data indicating the construction, operation, application and specifications of Hele-Shaw pumps, motors, transmissions, regulators, pumping units, differential valves and pipe testing machines. Many of the illustrations in this book are hydraulic press applications, the largest single field for fluid power.

Booklets mentioned in these columns will be sent without charge to executives who write for them on their company letterheads.

Apply an ARC Plastic

"PICK-UP"

to Your Product Sales

Dixie Cup Makers Carry Sanitation a Step Farther at Soda Fountains with Automatic "Pick-Up" Sundae Dish Holder . . . Plastic Molded by

AMERICAN RECORD CORPORATION

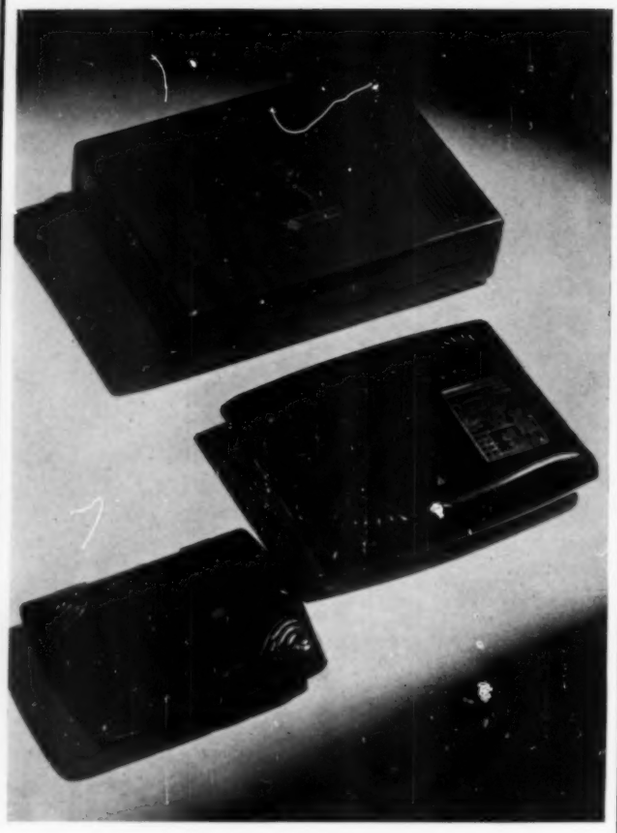
You will probably see these new, novel, plastic molded holders time and again at your favorite soda fountains. Note how quickly, easily, and cleverly they pick up the Dixie cup for your sundae. They have an almost human touch, yet no hands touch the cup. An ingenious device, skillfully molded by those whose skill you can use profitably to solve *your* plastic molding problems.

AMERICAN ARC RECORD CORPORATION

Plant and General Offices: SCRANTON, PA.

Executive and Sales Offices: 1776 Broadway, New York
Chicago :: Detroit :: Cleveland :: Hollywood, Cal.

Combining Metal and Plastics



Because of the fact that our plant facilities include excellent metal working equipment we are able to quote complete prices on any combination of plastics with metals. Every detail is handled under one roof—designing, mold-making, molding, metal parts fabrication and the fitting of metal parts to plastics which we mold for you. The saving of your time is significant. The full responsibility is concentrated in us.

THE WATERBURY BUTTON CO.

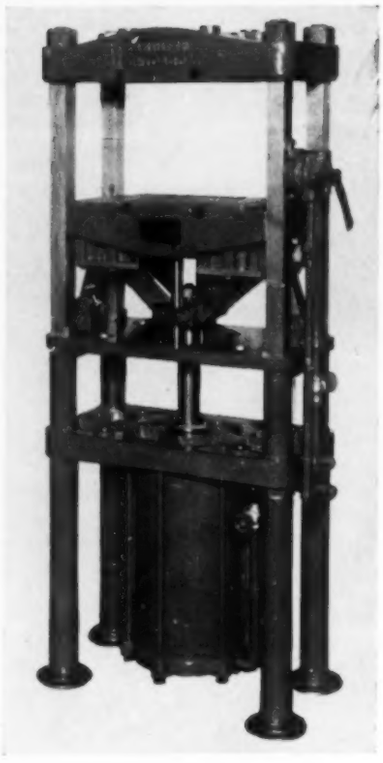
PLASTIC DIVISION

EST. 1812

WATERBURY, CONN.

NEW YORK CITY BOSTON PHILADELPHIA ROCHESTER
DETROIT CHICAGO TORONTO

new machinery



Air Operated Molding Press

A compact 15–18 ton capacity air operated platen press for plastics and rubber molding operations is announced by Hannifin Manufacturing Company, Chicago. The design of this new press provides an advance stroke at six times the speed of the pressing stroke. The advance stroke is $5^1/_2$ inches at 6000 lbs. pressure and the pressing stroke $1^1/_2$ inches at 30,000 lbs. This cycle of operation permits rapid production, and one operator easily handles the steady production of several presses.

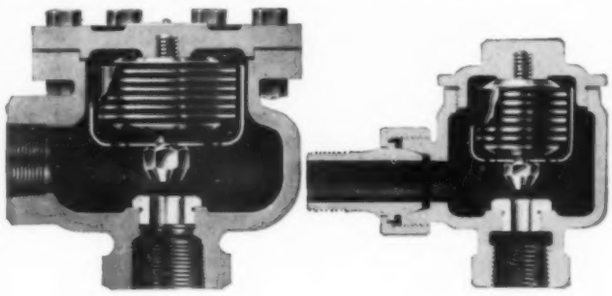
This new press is being used for both hot and cold molding, rubber molding, and several types of special molding operations. One prominent manufacturer of electrical specialties has already installed 34 presses of this type. Speeds and pressures may be regulated to suit individual requirements of any particular molding work.

An especially valuable feature of this press in plastic molding work is the provision for the use of maximum pressure to "break" or separate the molds on the reverse stroke after the pressing operation is completed. An air cushion at the end of the stroke prevents shock.

Since the press is air operated it is compact and comparatively light in weight. Use of the ordinary shop air supply makes it unnecessary to install hy-

d aulic pumps or special hydraulic power supply for n olding work. This feature is particularly important i. the establishment of a molding department, or the n odernization of present facilities at a moderate investment. Production capacity may be accurately suited to requirements, and future expansion provided easily when needed.

Dimensions are: Platen 17 × 14 inches, between columns 22 inches, daylight, platen down $17^1/_2$ inches, platen up $10^1/_2$ inches. Advance stroke is $5^1/_2$ inches at 6000 lbs., power stroke $1^1/_2$ inches at 30,000 lbs. Advance speed is six times the pressing speed. Cushioned reversal at full power is provided for separating molds upon completion of the molding period. The capacity of 15 tons is with air line pressure of 80 lbs. per square inch; 18 tons at 100 lbs. per square inch. Same type press inverted is available for bench mounting.

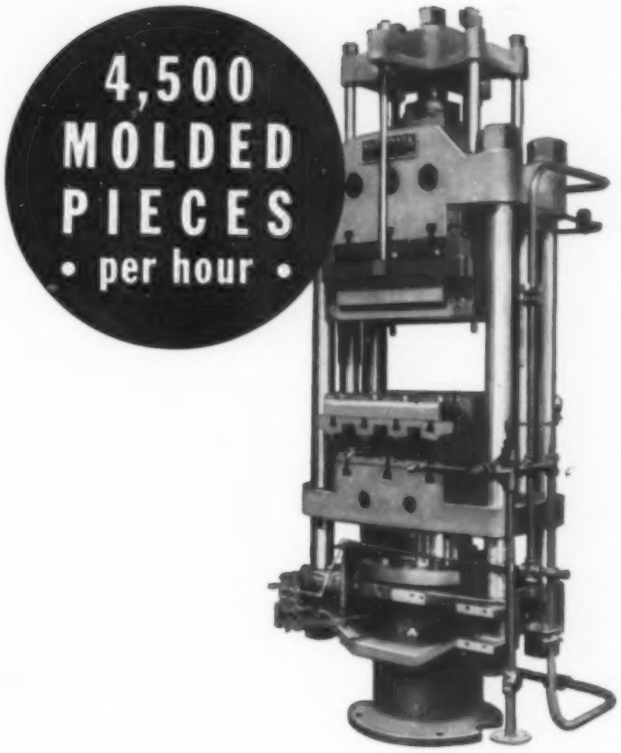


STYLE "C" STYLE "AU"

NEW STEAM TRAPS

Two new models of Steam Traps have just been introduced by W. H. Nicholson & Company of Wilkes-Barre, Pa., the Style "AU" and Style "C." The Style "AU," with a union connection and of bronze construction, is adaptable for use on radiators and unit heaters where reduced high pressure steam is used. In event the reducing valve should stick, or get out of adjustment, and the pressure increases up to as high as 150 lbs., it will not damage the bellows element of this trap, it is stated, as sometimes happens with low pressure radiator traps. The bellows are made from phosphor bronze tubing hydraulically formed, and with end plates brazed on and not soldered, which accounts for its ability to withstand high pressures and temperatures. The Style "C" is of cast iron construction, good for pressures up to 200 lbs., and made in angle type so trap drains itself when steam is turned off. This feature is desirable on outside installations as it prevents freezing. This trap also has the brazed bellows element as described above, which gives it an intermittent discharge and an enormous capacity for both water and air. Valves and seats are of hardened Stainless Steel.

A four page descriptive folder with charts showing actual size valve orifices used on average traps of these types of valves and the Nicholson Industrial at various pressures will be interesting to plant managers with a weather eye for economy. The folder will be mailed for the asking—address your request to W. H. Nicholson & Co., 204 Oregon St., Wilkes-Barre, Pa.



High production, perfect product and low cost are the outstanding features of this Southwark semi-automatic molding press.

4,500 perfect molded parts (from a phenolic compound) are made per hour. Two of these presses can be so connected as to be operated by one man, bringing production up to 9,000 pieces per hour.

Southwark is constantly studying the equipment requirements of thermoplastic molding for the purpose of offering methods and machines for cutting manufacturing costs, for increasing production rates and profits. Nearly a century of accumulated experience stands behind Southwark's engineering and production of such equipment.

Whatever your manufacturing problems—be they large or small, standard or special—consult Southwark.

BALDWIN-SOUTHWARK CORP.
Southwark Division Philadelphia
Pacific Coast Representatives:
The Pelton Water Wheel Company, San Francisco

SOUTHWARK

Consultants on Molding Equipment:
Burroughs Engineering Company, Newark, N. J.

PLASTIC MOLDS

For seventeen years, leading molders have recognized this firm as the outstanding specialists in the manufacturing of molds for plastic materials in die-sinking, engraving and hydraulic hobbing.

Our plant is Keller equipped for the most economical and speedy production of superior molds.

Place your problems in the hands of this experienced, well recognized and financially responsible concern.

NOCD

NEWARK DIE COMPANY, Inc.

24 SCOTT STREET, NEWARK, N. J.

TELEPHONE—MARKET 2-3772-73

Phthalic Anhydride Flakes

CHEMICALS OF QUALITY

Monsanto

ST. LOUIS, U.S.A.

Letters

Regarding Wood Veneer

The Editor:

Sir:

I have just had quite a critical comment from Dr. Norton of our Laboratory in reference to your article on Plywood in the June issue. I want you to realize that this letter is only sent to you that you may be more fully informed on the matter. . . .

As you will recall, MODERN PLASTICS published information from us on gluing plywood. The paper of Stout and Collins which states that there has been practically no investigation of the use of resin as a bonding agent should, therefore, have been checked first.

They state that the pressures used in molding the wood are from 1000 to 3500 lbs. per sq. in. which would, of course, crush the wood fibre beyond recognition; showing that they have had very little practical experience.

From a selfish interest, we feel that articles of this kind really hurt us because the experienced men who read them, think they are authoritative and are misled. . . .

The very title of the article is wrong in that molded plastics are not used in applying wood veneers at all, but merely a resin is used. Their method of using a resin from solution was patented by Baekeland and Thurlow—U. S. patent No. 1,019,408 in 1912. Since that time many improvements have been made on the method of gluing with phenolic resins, such as that of McLane—U. S. Patent No. 1,299,747, taken out in 1918; Plauson—U. S. patent No. 1,436,820 taken out in 1922; Harry M. Dent's patents No. 1,894,088 and No. 1,917,022 which were taken out quite recently. . . .

General Plastics, Inc.
H. S. Spencer

North Tonawanda, N. Y.
June 20, 1935

The Editor:

Sir:

While we agree with Messrs. Stout and Collins, the authors of the article entitled "The Use of Molded Plastics in Applying Wood Veneer" in your June issue, that extreme durability can be obtained in plywood construction through the use of resin, we must point out that high resistance of plywood to moisture is obtained by quite commonplace methods of gluing with either

casein or blood albumen adhesives. It is not uncommon for casein-glued 3-ply maple constructions to be called upon to withstand 8 hours' boiling, or many days' immersion in cold water, without separation of the plies. The resistance of casein-glued plywood has long been recognized by the United States Army and Navy Departments, as is evidenced by their specifications covering the use of such plywood in airplane construction.

As a matter of fact, resins—both phenolic and urea—are now used in veneered construction and with pressures and temperatures very much less than those specified in the article referred to.

The Casein Manufacturing Co. of America
W. F. Leicester
Manager, Casco Division

350 Madison Ave.
New York City
July 15, 1935

INTRODUCTIONS OF NEW INDUSTRIAL PRODUCTS

by U. S. Department of Commerce
Price, 5c per copy

The Bureau of Foreign and Domestic Commerce has issued a pamphlet telling how to eliminate waste in the marketing of new industrial products.

The booklet is comprised of 23 pages dealing with two large problems—first, marketing; and, second, origination and production.

The basic marketing principles are dealt with in the first section, that of size, location, buying power, competition, as well as the other fundamentals of a good market.

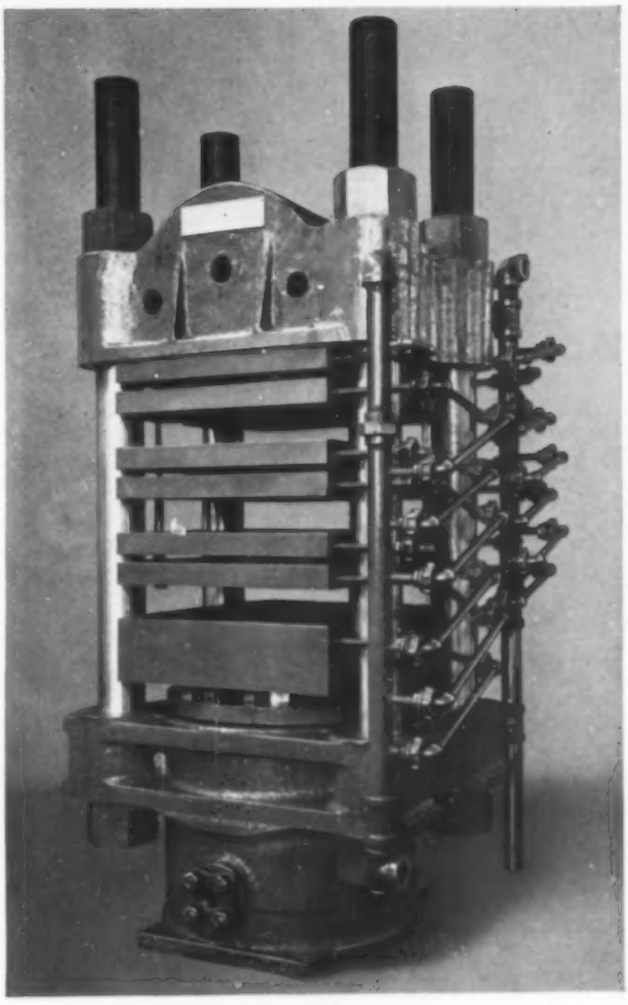
Each division of this section is represented on a chart at the back of the book which includes important questions to be analyzed by the manufacturer.

The second section similarly illustrated with a chart deals with the sources of new ideas, the necessity of adequate sales and service staffs, research and production engineers, good equipment and accessibility of raw materials.

All these points brought out clearly and intelligently in this pamphlet tend to make the manufacturer realize the importance of a thorough analysis of market conditions when bringing out new products.

Now in Europe

John A. Silver, Vice-President of the F. J. Stokes Machine Company of Philadelphia, Pa., manufacturers of pharmaceutical, chemical, and special process equipment, is on an eight weeks' trip through England and the Continent where he will visit a number of plants in the various fields served by his company and study conditions with a view to enlarging Stokes' manufacturing and sales facilities abroad.



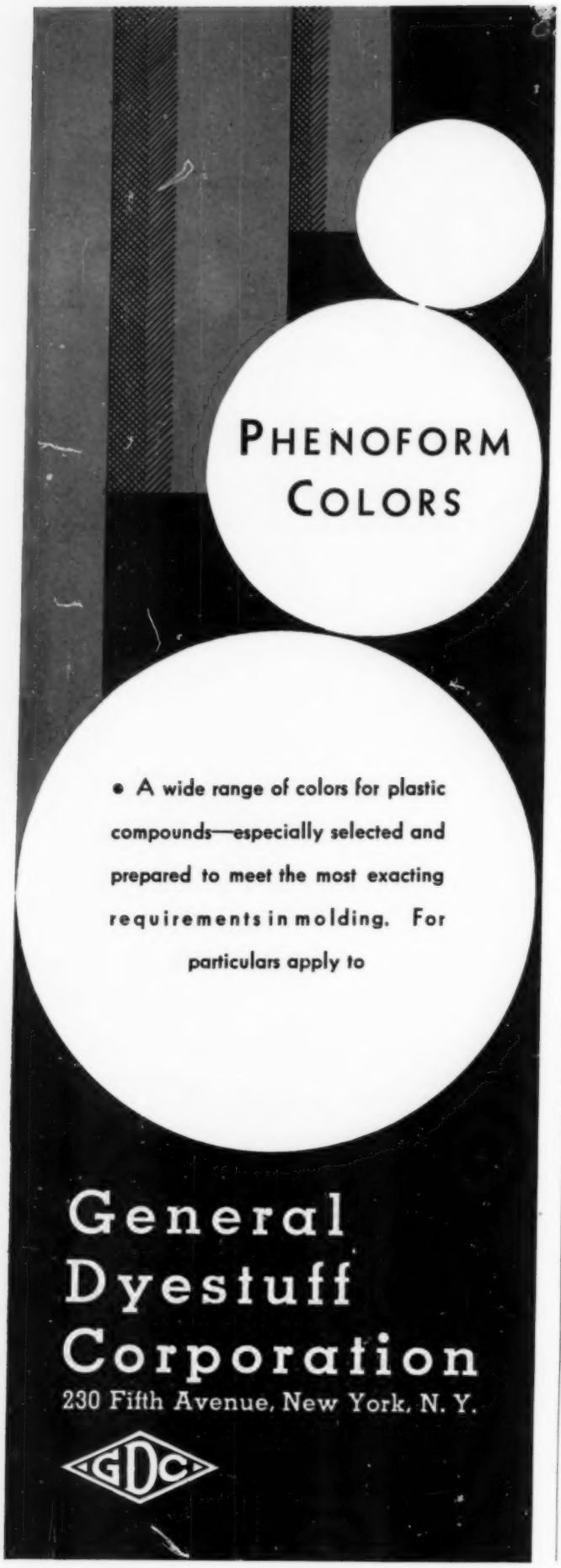
DEPENDABLE *service with reasonable first cost and low maintenance cost are some of the reasons why leading engineers specify*

BARCO
Swivel Joints

As standard equipment upon this Baldwin-Southwark steam platen press of eight hundred tons capacity, twenty-five Barco Swivel Joints provide unfailing leak-proof action. They are equally fluid tight under suction or pressure—do not leak under the stress of alternating steam and cold water. Long life adds the desirable feature of low maintenance cost to their dependable action.

Write for catalog 254

BARCO MANUFACTURING COMPANY
1813 Winnemac Avenue Chicago, Illinois


PHENOFORM
COLORS
• A wide range of colors for plastic compounds—especially selected and prepared to meet the most exacting requirements in molding. For particulars apply to
General
Dyestuff
Corporation
230 Fifth Avenue, New York, N. Y.
GDC

A GOOD PLASTIC WON'T DOWN

(*Continued from page 27*) more widely employed.

Again, however, there are signs of a change which may have an important effect in favor of nitrocellulose. Slide fasteners, heretofore made largely from metal, are gaining wide use in apparel as well as in other fields. They have displaced buttons in many instances. Now come announcements of the use of nitrocellulose in making slide fasteners. Because of the wide range of highly attractive and permanent colors which this type of plastic makes available, the use of slide fasteners bids fair to see an important extension. Thus, to replace the loss of the button market, once enjoyed in part by nitrocellulose, the latter material may gain an important new outlet in the slide fastener field, especially as this material appears to be better suited for use in slide fasteners than other plastics are.

Still another new market for nitrocellulose is being found in a very different field, namely, packaging, through developments in making containers such as are involved in the Lusteroid line. These include vials of different forms as well as collapsible tubes. Though this new outlet is not very large as yet, it is increasing and adding to the market for nitrocellulose.

At present, one of the largest uses for nitrocellulose is in the production of thin sheets, thinner than are yet produced in quantity from any other plastic except cellulose acetate. Such sheets, besides being applied in sheet form for a wide range of novelties and printed items, are also cut into strips or are produced originally in strip form. A very wide use is found for strips, of course, in the making of motion-picture and other photographic film, but a newer use is in the production of spirally wound tubing. This is applied in making fountain pen barrels, among similar products.

Very recently a similar process has been adapted to the covering of steel pipe as used for underground pipe lines by the petroleum industry. This application, which was described in the July issue of MODERN PLASTICS, provides a coating that is not porous and which consequently prevents the corrosion of the pipe in the ground. How large an output of nitrocellulose strip this may involve will depend, of course, on many factors. It is now being applied to some three hundred miles of pipe and if its use extends, as anticipated, it may well involve the use of very large quantities of this strip plastic. In any event, its use for this purpose is another sign of the adaptability of nitrocellulose plastics for industrial purposes and an indication of the way that new applications are likely to keep nitrocellulose in the forefront of the plastic field for many years to come.

All forms of plastics are in competition, to some extent, with other forms as well as with other materials. The foregoing examples indicate, however, that, despite their rather high cost, nitrocellulose plastics can gain new markets and are likely to continue doing so as long as their progressive makers remain alert to their possibilities. Thus, with this, as with other plastics, one is justified in saying, "a good plastic won't down."

Lower Cost— Better Moldings Triple MAKALOT sales in one year

*Users of Makalot have found it such an ideal plastic material for finish, quality and cost that Makalot's sales have tripled in one year's time! We have had to install additional rolls, kettles and blenders to take care of the demand.

Here's why Makalot will mean better molded pieces for you too:

1. Does not warp. It won't lose its shape in your customers' hands.

Typical is the case of the maker of an intricate, thin-walled electrical part who had frequent rejections for warping although curing time was 3 minutes. With Makalot, the job was done with *no warping* and curing time was 1 minute, 30 seconds.

2. It has a beautiful finish. No cheap chemicals are used in making Makalot resin.

3. Makalot cuts costs by reducing curing time from one-quarter to as much as one-half.

Test after test has proven the economy of Makalot. A molder decreased curing time on a switch housing from 210 seconds to 115 seconds with Makalot. One manufacturer stepped up production on an attachment cap from 38 per minute to 60 per minute on black and 72 on brown.

4. Makalot is free-flowing and does not stick or stain. It makes for better production at lower cost.

5. Makalot is ideal for large moldings. When two other materials were used on a wall plating job, production averaged 98 per day. Production shot up to 192 per day with Makalot.

*Have you seen Makalot's new oil and water resisting material? Bounce it as hard as you like and it won't crack. It is strong . . . it's flexible . . . it will not break.

*Are you overlooking these opportunities Makalot provides for faster cure, better flow, smoother finish, greater strength? Ask your molder to make a comparative test with Makalot. We will gladly help you with any knotty problems you are faced with. Write to—

MAKALOT CORPORATION

262 Washington Street, Boston, Mass.
FACTORY, Waltham, Mass.

Manufacturers of Molding and Paper Impregnating Resins, Lacquers, Varnishes and Cements

WHEN YOU NEED HELP WITH YOUR PLASTIC PROBLEM . . . Call Stokes

PLASTICS & HARD RUBBER IN EVERY CONCEIVABLE FORM

The many difficulties encountered in translating your original idea into a finished molded piece of permanence and beauty may be simplified and costly errors avoided if you will call on our staff of designers and molding specialists.

Jos. Stokes RUBBER CO.
TRENTON, N. J.
Canadian Plant, Welland, Ont.
Molders since 1897

PLASTIC MOLDING

★

Producers of the finest in molded parts for over forty years

SHAW

SHAW INSULATOR CO.
Irvington, N. J.

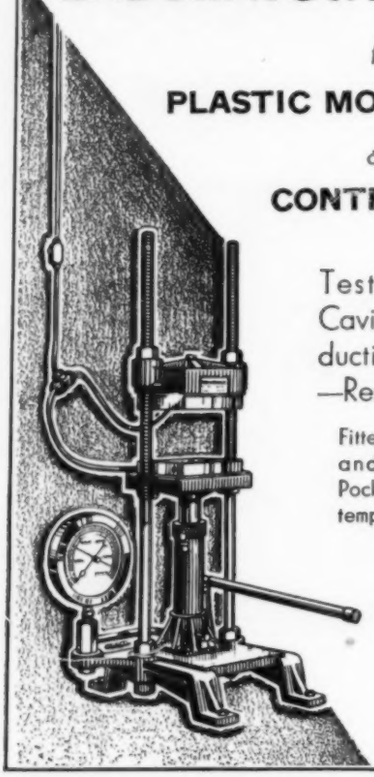
The **CARVER LABORATORY PRESS**

for

PLASTIC MOLDING TESTS

and

CONTROL WORK



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Hydraulic Engineering and Equipment
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DESIGN MOLDING FOR PHYSICIANS

(*Continued from page 33*) Comprex Oscillator Corporation, "that manufacturers of physicians' equipment have ignored the possibilities of beautifying a product, made available by developments in the field of molded plastics. Manufacturers of small radios, electrical home appliances and novelties for the extremely competitive markets, however, have been quick to recognize the value of these new materials in applying sound principles of artistic design to their products. In a large percentage of instances, the result has been a most gratifying jump in sales directly attributable to the added 'eye appeal' and general attractiveness.

"Usually where molded plastics have been employed in the construction of physicians' equipment, they were adopted purely for their inherent physical and insulating qualities with apparently little thought given to the potential sales appeal which might be obtainable through the use of artistic design.

"In the designing and development of the New Comprex Cautery which is being presented as the Anniversary Model, the aim was to build a product whose attractive appearance and unique features of convenience and usefulness would tremendously increase its value and desirability to the consumer and its saleability for the dealer."

Credits: The Boonton Molding Company for molding; The Bakelite Corp., for Bakelite used in the black moldings; Toledo Synthetic Products Corp., for Plaskon used in the light colored moldings; and The Tennessee Eastman Corp., for Tenite which was used in the manufacture of the knobs.

MOLDING REMOVES OBJECTIONS—LOWERS COSTS

(*Continued from page 19*) tecture and decoration, and equally at home in the atmosphere of period rooms. Its white letters, still Goudy because it is the trade-mark of Western Union, are smaller than before and are wiped in. A depression is left in the housing so that a name plate can be set in place over the original letters if they should become damaged during service.

"Our one regret," says one of the Western Union engineering staff who designed the new instrument, "is that the device couldn't have been a little thinner, but the clock-like mechanism, with its code wheel which indicates the customer's address when a call is sent, must have ample space to operate. The mechanism itself must be of sufficient size and ruggedness to render continuous dependable service over a period of many years with a minimum of attention. Since this is the first consideration of the call-box, the design is incidental, although we believe it presents a marked improvement over its predecessor in both silence and looks." The new mechanism can scarcely be heard when in operation.

The new box is designed to fit a standard switch box of an electric circuit in home or office wherever such method of installation is desirable. Its refined appearance is in perfect harmony with electric fixtures, and other essential furnishings in the library or study of the executive who finds it convenient to have a call-box installed in his home.

Its one note of commercialism lies, perhaps, in the bright red turn-button with which its mechanism is operated. This turn-button is reinforced with a strip of bronze which is molded in. A square hold in the bronze strip which strengthens the turn-button fits over a square shaft that insures definite operation when a call is sent and removes any possibility of slipping or wear. The red button is the direct result of a suggestion made by Ralph Steffen, a Western Union messenger in the Minneapolis office of the Company. The button on the old box was black and difficult to see. The red button, against a background of deep, rich blue serves an obvious purpose. It is easy to see in a sparsely lighted room, and its brilliant color attracts the eye and hand naturally when a call is to be sent.

The device is molded of Bakelite 6-M-345 by the Niagara Insul-Bake Company, Albany, New York.

MACHINING CAST RESINS

(*Continued from page 21*) the use of a cooling compound. Small holes, less than ten-thirty-seconds of an inch in diameter, can be used without threading by running the machine screw into the hole so that it cuts its own thread. This practice is not advised for larger holes.

Can Cast Resins Be Turned?

Much turning is, of course, avoided by the use of round castings. For shapes that cannot be achieved with rod or tube cross sections, lathes, milling machines and automatic screw machines may be used. Such parts as candlesticks, and many other sections of irregular contour are often shaped on a wood-turning lathe, as shown in Figure 3. Straight and taper turning, boring and thread cutting are done on engine lathes of the type shown in Figure 4. Speeds and feeds, as used for hard woods or brass, are recommended. In general, high speeds and light cuts produce the best results, cutting speeds ranging from 200 surface feet per minute upwards. While much work is done dry, makers advise a non-alkaline cooling compound for higher speeds. Ordinary cutting oil, free from caustic and soda ash, is generally used.

It is important that tools should be properly ground with a slightly negative rake and that they be set at or slightly below center. If tools are properly ground, chips will come off in a long ribbon. Overheating of the

IT TAKES MORE THAN MOLDING SKILL . .

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material should be avoided because of the possibility of discoloration. Work can be held within limits as close as 0.001, but, since some slight shrinkage usually occurs after machining, an allowance for shrinkage should be made where extreme accuracy is required. In most work, such care is not essential.

How Can Cast Resins Be Carved?

Carving, engraving or embossing is done in the same manner as with ivory, bone or wood, either by hand or with suitable machinery. Carving is often done with small abrasive wheels turning at high speeds. These can be formed to make cuts of different sections. Fine rotary steel cutting tools are also used. On decorative work, such as jewelry, where hair-line accuracy in the location of cuts is not essential, the tool is often guided by hand. Some fabricators use special automatic milling machines to carve long runs of identical pieces at high speeds. Automatic screw machines are often used to turn out small parts in the same way that small metal parts are produced.

What about Polishing?

Cast resins polish to a high, pemanent luster. Rough cuts are usually ground, using the same type of equipment as required by wood or brass. Sand paper, garnet paper, belts or fine abrasive wheels are used. For most work, a generous supply of water is recommended, when wheels are used, to prevent overheating and to keep the wheel clean.

Surfaces which show tool or grinding marks are given a smooth surface, preparatory to final polishing, by "ashing," in which an ordinary buffing wheel, made of muslin discs, of twelve to fourteen inch diameter, is used. Wet pumice, kept in a shallow pan under the wheel so that the buff just touches it, is used as a polishing agent. Often, additional wet pumice, taken from the trough, is applied by hand or trowel above the piece being worked. Polishing is usually done, on larger pieces, by a second wheel, using bar wax or specially prepared polishing compounds. These wheels, usually twelve inches in diameter, operate around 1800 r.p.m. A third, clean dry wheel is used to give a final polish.

For large quantities of small and medium sized pieces, tumbling is often used. Here, barrels of hard wood, lined with leather or heavy felt and operating at about fifty r.p.m. are used. Solutions vary with the article being polished, a common procedure calling for preliminary tumbling in dry pumice, to which wooden shoe pegs or similar agents have been added to provide friction. The pumice is later washed off and a second tumbling follows in damp hard-wood sawdust. Other materials are sometimes used as well as pumice.

Can Cast Resins Be Cemented?

Smooth surfaced pieces can be cemented together readily, providing a water-proof and tight joint. Various types of cement are recommended by suppliers for different types of work.

Can Cast Materials Be Softened and Bent?

A certain degree of softening can be obtained by submersing the resin pieces in water for a few minutes at 150 to 180 degrees. When so softened, moderate shaping operations can be simply performed. After bending, the piece should be cooled in the form. Cold water may be used to speed cooling.

How Are Handles Attached to Metals?

In forming cutlery handles and similar pieces, it is often desired to attach these firmly to a metal shank. For this purpose, a hole, slightly smaller than the shank, is drilled and the piece then immersed in hot water until sufficiently pliant to permit placing over the shank or stud. In cooling, it shrinks on tight and subsequent application of similar heat will not affect the joint.

DANGERS ELIMINATED IN HIGH CYCLE, POLARIZED SERVICE

(*Continued from page 29*) inducing plastic usage.

For the plastic insulator serves not only as a separator for electrical parts, but, because of its strength and rigidity, it is a major structural part of any electrical fitting.

Add to these qualities still another, fine and integral finish and color, and we find that plastics, originally introduced for its dialectric properties, becomes the major portion of the electrical fitting—decorative housing, structural support, mechanical portion and insulator, all in one.

In planning Hubbellock receptacles and connectors, every one of these qualities was required and provided by a series of ingeniously molded parts. Thus R. W. MacNaughton, of Harvey Hubbell, Inc., manufacturers of these devices, reports:

> "In designing these fittings it was imperative that we use a material of fine appearance and one that could be formed to extremely close limitations to accommodate metal parts designed to fit into and be supported by the insulating parts. A careful study was made of all available materials, none of which seemed to have the characteristics which would guarantee the close tolerances we have to work to, with the exception of the molded phenolics."

Hubbellock receptacles and connector plugs are designed for power transmission in industrial plants where portable tools or appliances are used. Such power lines

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Satisfaction is guaranteed customers by the Enterprise Aluminum Company of Massillon, Ohio through the use of Kurz - Kasch handles and knobs on their Dripolator and other utensils. Their beauty is permanent. They cannot become unsightly and charred, and, since they resist heat, they will not burn fingers when touched.

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are of the polarized, high frequency type, demanding standards of strength and insulation far in excess of those required by ordinary lamp or home-appliance switches and fittings. It is of great importance that all current carrying parts be entirely enclosed—both when the line is in and out of use. It is likewise important that the connection made by the fitting be of a type that prevents accidental breaking of the current while permitting instant separation of the units when so desired. A third requirement, peculiar to polarized work of this type, demands that no possible opportunity exists for insertion of one part into another—for purposes of making a current connection—except into the proper position for which it is intended.

Hubbellocks are so designed that proper polarization absolutely prevents inserting the cap in any but the proper position. To gain a positive lock which guarantees against accidental current breakage, the parts are so designed that a slight turning movement is necessary after insertion of the cap into the receptacle to complete the connection. Once turned, the cap cannot work loose, yet a similar turning action is all that is necessary to break the locked connection.

Finally, to insure against exposure of current carrying parts, the receptacles are equipped with molded plungers which are free to slide up and down within the receptacle but cannot turn. This sliding action, incidentally, helps to keep the metal contact springs clean. The plunger is backed up by a heavy spring which holds it out near the face of the receptacle when the plug cap is not inserted. When in this position it closes the face of the receptacle, keeping the contact springs unexposed and free from dust. When the plug cap is inserted into the receptacle, the plunger is depressed.

On top of the plunger there is a raised cross, molded into the part. A similar cross is recessed into the front of the plug cap, so that when insertion is made and the cap is turned into locked position, the raised cross snaps into the recessed cross and latches the cap into place. A study of the illustrations of the assembled receptacles and plug caps will make clear the manner of their operation and the safety it insures.

It is obvious from the above that Hubbellocks must not only be electrically perfect, but must also have mechanical qualities making for long wear under the trying conditions of use—and abuse—common to factory operation. Here the great strength of molded phenolics plays a most important part.

Still another consideration operates, however, to insure the choice of phenolic moldings over other materials. This is the element of cost. An examination of the illustration of the molded parts themselves discloses their intricate shape. To achieve such intricacy, combined with adherence to the required close tolerances, by the use of any but molded parts would have required a number of expensive shaping and finishing operations. Yet, through the use of molding, each part is completed in the single plastic-molding operation.

Thus phenolic moldings once again make possible the low cost fabrication of electrical parts which by any

other method would be prohibitive in cost if not entirely impossible of manufacture.

Credit: To Auburn Button Works, Inc., for molding of all parts.

To Bakelite Corporation, for making phenolic molding material used.

OPPORTUNITY IN HOUSEWARES

(*Continued from page 23*) we could find no answer is, why are ice-box, or left-over, dishes always made of glass or enameled metal? They must be expensive to ship because of their weight, and there must be considerable loss through breakage and chipping both in shipping and on display. Urea dishes, it seems, would have every advantage for this purpose, yet we saw none on display. We went out and asked one department store the reason. The buyers didn't know, except that glass and enamel ware are the only materials that had come to their attention for the purpose. Quite a market there for someone to crack.

Well thought out applications of plastic materials have increased sales for manufacturers in many lines of merchandise. Department stores and specialty stores are gaining in their appreciation of the material for decorative and utilitarian purposes. Wholesalers and jobbers are enthusiastic about plastics, because they lend life to dull products. But many manufacturers who might profit through their use are not well enough acquainted with the material to understand how they can use it to advantage. They have the necessary equipment perhaps to produce their merchandise by their present methods from materials they have used over a long period of time. They naturally hesitate to scrap this equipment for an unfamiliar process of which they have no understanding. Molding plastics is a specialized business. Molders alone have the experience to do the work successfully. It would seem, therefore, that there is a definite field—or many of them—in which molders could specialize with profit to themselves and to the entire industry.

TELLING CUSTOMERS HOW

(*Continued from page 17*) puzzle. Earring blanks from sheets of cast resin to their final polishing were arranged along the floor in a glorious array of color with the various steps of their progress clearly exposed.

The background of the window was of soft, off-white fabric with a panel of pastel blue along the foreground of the floor. Two circles, covered with the same off-white material, were placed a few inches from the background and around their circumferences, finished clips and pins were displayed. Plain sheets of cast resin of contrasting colors were attached to the background.

Flat and tubular molds in which the material is cured were shown with the formed material protruding from

ELECTRICAL PRODUCTS
have their own headaches!

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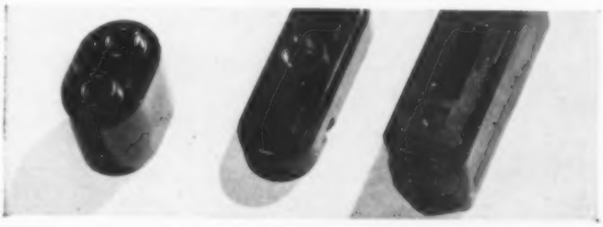

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the ends demonstrating exactly how the material is removed from the molds and how it gets its natural high luster. Little cards were used to explain each exhibit.

To further dispel the mystery of cast resins, and to intrigue the imagination of those who witnessed the exhibit, plainly labeled bottles of chemicals which enter into their composition, formed the focal point of the display. There was a large bottle labeled "Liquid Marblette," another labeled Formaldehyde, and others of Phenol, Auramine and Saframine. No further secrets were divulged and there is little likelihood that those women who stood admiring the finished product would go home and try to roll there own. Nor is there any question that these women were impressed. It was probably the first opportunity many of them had ever had to learn even the fundamental nature of the material from which seventy per cent of their costume jewelry is made.

All of the cast resins in the R. H. Macy display were Marblette and the educative accessories were furnished through the courtesy of the Marblette Corporation, Long Island City, N. Y.

PLASTICS BACKSTAGE

(*Continued from page 16*). Already practically silent by virtue of plastic precision gears, these costly machines are still further protected by four separate box walls of laminated and molded material, secured by plastic cement. An aluminum cruciform frame supports the two inner walls with their ¾ inch air space enclosed by ⅛ inch laminated. The outer frame member provides an additional ½ inch air space, supporting the extreme outer and inner shell of 1/16 inch black laminated. Mr. Elmer H. Johnson of the "Mechanical Effects" Department at Universal, who has recently constructed fifteen of these "blimp" cameras, as they are nicknamed, says, "The plastic construction imparts incredible strength and elasticity. Each camera is worth several thousand dollars, yet I have seen one drop twenty feet to a concrete floor and sustain no more damage than a tiny dent or two on its outer plastic shell."

Varnish made from synthetic resins is a staple on the shelves of the Hollywood studios. After experimenting with various "sizes," Johnson has worked out formulas by which this plastic cement will weld together every known material (waxes and oils excepted): glass to glass; glass to wood; metal to metal, etc. "Give it time to dry thoroughly," says he, "and it cannot be torn apart without wrenching the fibres from the wood."

Rods, tubes, sheets and bats are the very backbone of "Mechanical Effects"—the Hush Hush Department, where eighty of Universal's employees toil and plan their marvels to perform. To mention only one of plastic's uses in this branch of filmic stagecraft would be unfair, since it would dispel the illusion of reality in many stage presentations for millions of theatergoers throughout the world and rob the producers of their chief asset, *audience surprise values*. However, techni-

cian Johnson drops a wee hint when he reminds you that plastic doesn't "squeak" when used structurally.

It is quite okay to reveal, though, that one sideline of this department saves the boss (Carl Laemmle) several thousand dollars annually in the matter of architectural and drafting room fees: i.e., in the construction of set models. Picture directors can seldom visualize the action they desire from studying a sketch or plan of a set on which this action will be portrayed. Hence, Johnson has recently built scaled models of these sets in plastic. Where set specifications call for painted walls and such things as marble columns, the molded plastic can be bent, with heat, into any required shape or angle, while the natural lustrous sheen of the material produces a realistic building façade or "interior."

Motion picture production has come to be regarded as more of an art than a science. The individual sound engineer, working with his special circuits and frequencies can improve the voice of a prima donna or the reproduction of an entire orchestra far beyond its natural state—besides the many other human variables. Such cinematographic artists, men of the calibre of Lindsay and Johnson, are constantly working and experimenting with plastic to the end that this versatile product may achieve still further triumphs in the theatrical field.

"Television will create a terrific demand for plastics because of the large number of stages of amplification and the need for greater insulation," says Lindsay.

REDESIGN ZOOMS SALES

(*Continued from page 39*) Modern Specialties and when "Valets" began to appear on the market in their new design, sales more than tripled within a surprisingly short time. Present indications are that a still greater volume will be realized this Fall.

Success stories of this sort frequently have the flavor of "fairy tales" but those who have experienced the phenomenal spurt of sales which follow intelligent redesign know they are true. Redesign has paid dividends in increased sales and extra profits to hundreds of manufacturers who have had courage to step off the beaten path, and vision to see the new order of materials and design. Plastics have played an important part in helping them to secure these benefits. Many of the leading molders maintain designers on their staffs whose services are available for investigation and redesigning suggestions. Their experience with plastic materials and plastic products can be useful to any manufacturer who is interested in bringing his product in step with the times. Improved appearance, simplified construction, reduced finishing and assembly costs, improved mechanical operation, and economical merchandising through reduced weight of the finished merchandise, are often within easy reach by a simple, intelligent application of plastics and modern design. The "Valet" is molded of Textolite, by the plastics department, General Electric.

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INDEX OF MODERN PLASTICS ADVERTISERS

American-British Chemical Supplies, Inc. 48
American Catalin Corp. 1
American Insulator Corp. 61
American Plastics Corp. 59
American Record Corp. 49
Bakelite Corp. ..... Inside Back Cover
Baldwin-Southwark Corp. 51
Barco Manufacturing Co. 53
Beetleware Corp. 10
Carver, Fred S. 56
Cavagnaro, John J. 63
Celluloid Corp. 7
Chicago Molded Products Corp. 58
Claremont Waste Mfg. Co. 60
Colton Co., Arthur 48
Eagle Tool & Machine Co. 58
Fiberloid Corporation, The 45
Formica Insulation Co., The 6
General Dyestuff Corp. 54
General Electric Co. ..... Back Cover, 5
General Plastics, Inc. ..... Inside Front Cover
Illinois Testing Laboratories, Inc. 60
Kuhn & Jacob Moulding & Tool Co. 57
Kurz-Kasch Co., The 59
Logemann Brothers Co. 47
Loomis, Evarts G. 57
Makalot Corporation 55
Marblette Corp., The 2
Monsanto Chemical Co. 52
Newark Die Co., Inc. 52
Northern Industrial Chemical Co. 61
Resinox Corp. 8
Reynolds Spring Co. 63
Richardson Co., The 4
Shaw Insulator Co. 56
Standard Tool Co. 62
Stokes Rubber Co., Jos. 55
Synthane Corporation 9
Tennessee Eastman Corp. 43
Toledo Synthetic Products, Inc. 34–35
Waterbury Button Co. 50

IN PARTICULAR, this is an example of a newest Catalin application in the field of costume jewelry. It also serves, generally, to illustrate that Catalin can be carved deeply and shaped gracefully at the will of the designer. The bracelet further exemplifies that Catalin is available in forms that closely follow the lines of the finished product (this being cut from a hollow rod casting. Proof is evident from the picture that complementary motifs of other materials can be cemented or mounted to Catalin's brilliant gem-like surface . . . and because Catalin is available in so extensive a range of colors, you may conclude that it affords accurate style interpretation — a full freedom of color-choice.

Catalin

AMERICAN CATALIN CORPORATION
ONE PARK AVE., NEW YORK

"Jubilee" is the name given to the Catalin ensemble pictured above and to the left. It is an inexpensive new Fall 1935 creation — designed by Cahn & Company, Fifth Avenue, New York. It is being offered in Plum, Dubonnet, Devon Green, Black, Shell and Brown.

REAL MARBLETTE

THE BEAUTY OF THE JEWEL AT A FRACTION OF ITS COST

SATISFYING

the desire for a

glow of COLOR

Men have spent centuries searching for inexpensive substitutes for jewels, precious metals and even the precious stones. Their desire has been to brighten the articles of every-day use with the eye-pleasing values of quartzes, crystals or glowing stones.

Were it possible to find an unlimited supply of these rare materials for industry, men would still find them fragile in processing and use, needing great care and skill in carving or shaping, and delicately sensitive to extremes of temperatures. They might no longer be rare, but neither would they be adaptable for daily usage.

Real Marblette

However, with a *use advantage* for every disadvantage of even the more common and stronger natural stones has beauty covering the entire range of the semiprecious stones. For Marblette is unaffected by shock; chip-proof and can be fashioned into an infinite number of desirable and useful objects and shapes.

The distinguished precision products of many of America's industrial leaders have been jewelled with touches of Marblette. Many well-known articles in common use are made wholly or in part of Marblette.

For the manufacturer whose requirements can be met from our large stocks of Marblette there are more than 300 standardized shapes available as blocks or sheets, and fluted, round, square or hexagon rods. And these are supplied in more than 200 of the most wanted colors—mottled, opaque, translucent or transparent.

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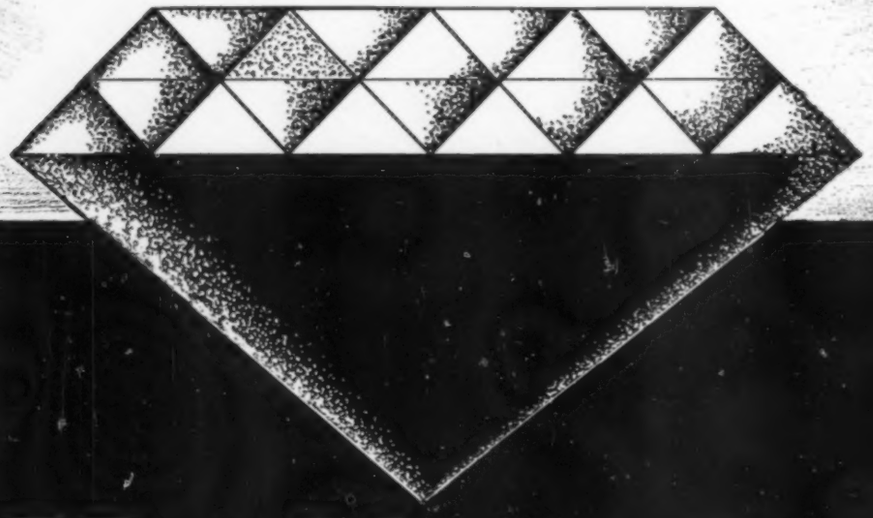

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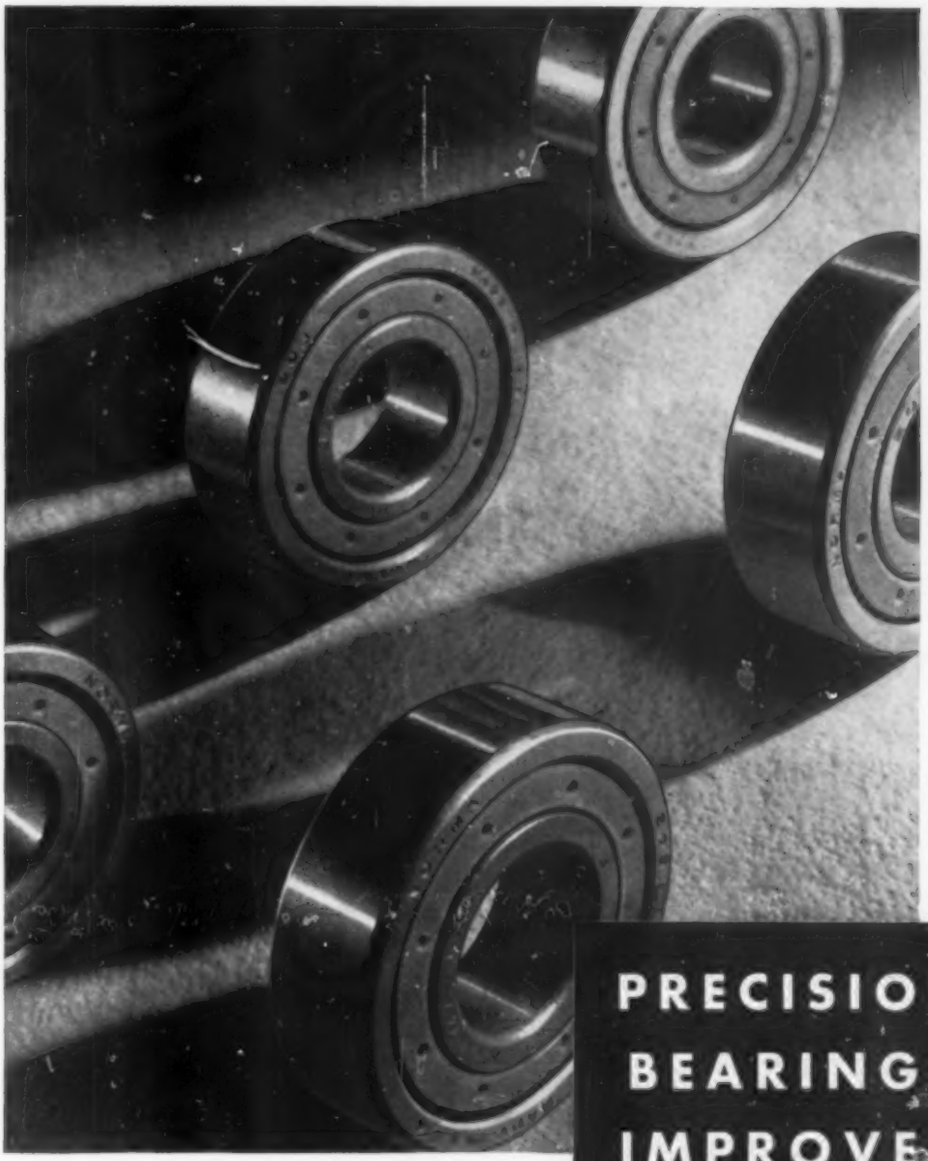
T E X T O L I T E



PRECISION BEARINGS IMPROVED BY TEXTOLITE

TEXTOLITE retainer rings are used by the Norma-Hoffmann Bearings Corporation, Stamford, Conn., in its "Litro" deep-groove, Type CL, extra-high-speed bearings.

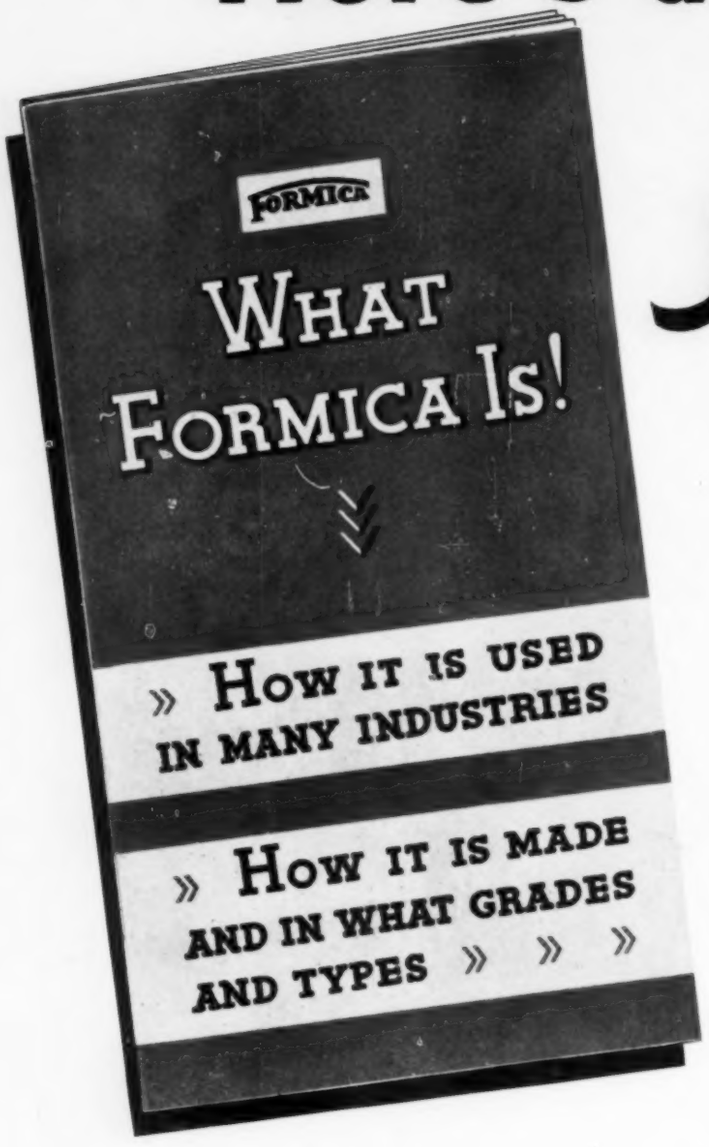
For this purpose, Textolite offers marked advantages over metal. Textolite is non-metallic—it is not brittle and does not crystallize. It machines easily and accurately, and results in perfectly balanced retainers which require little lubrication and are subject to but little friction in contact with polished-steel surfaces. This low friction characteristic, coupled with light weight, enables Textolite retainers to give high bearing efficiencies.

This use is only one of the thousands that industry has found for Textolite. For information concerning the adaptability of Textolite to your products, write to Plastics Department, General Electric Company, West Lynn, Mass.

942-40

GENERAL ELECTRIC

» Here's a Book You Want — *Send for it!*



This booklet describes how Formica is being used in a great many industries, tells the grades and types in which it is made to adapt it to special purposes, and describes in detail methods of machining and working the material.

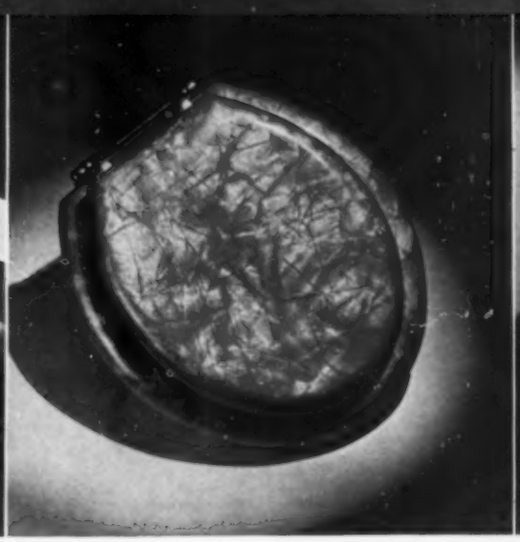
Every user of laminated phenolic sheet, tubes or rods will find it has useful as well as interesting information on the ways in which this material is used as an electric insulator, in chemical industries for its chemical inertness, and in mechanical industries for an elastic and non-metallic gear.

It is yours on request.

THE FORMICA INSULATION COMPANY
4638 SPRING GROVE AVENUE, CINCINNATI, O.

FORMICA

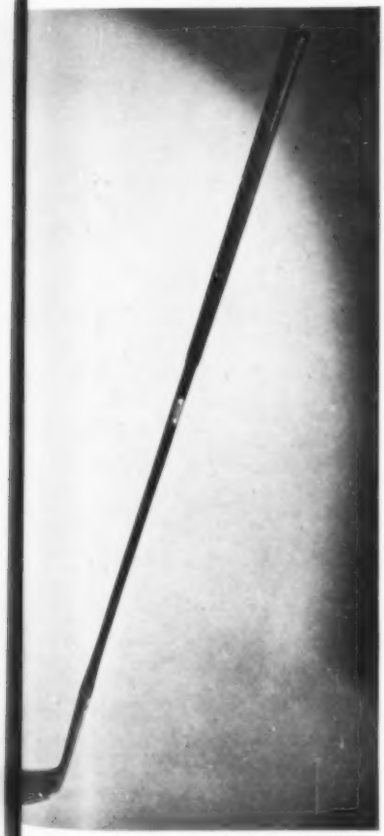
A painted or enameled wood towel-rack might last a year before peeling and chipping set in. A Celluloid sheathed rod—actually less expensive—is good for ten to fifteen years without replacement.



Two Celluloid applications, known the world over. In iridescent pearl and infinitely varied other effects, Celluloid covered seats and hampers provide both the appearance and the assurance of absolute cleanliness.

Protect as you beautify with

CELLULOID VENEER



Celluloid is so easily worked, so beautiful in its myriad colors and effects, so tough and permanent a protector against rust, moisture, scuffing and wear, that literally hundreds of products you use every day are protected by veneers of Celluloid. The few applications pictured here are typical of the variety of objects it beautifies, from tiny shoe-buttons and shoe-lace-eyelets, to sturdy, everlasting towel-racks.

In making your product, consider the advantages Celluloid veneers offer. Permanent protection, unequalled beauty, the fullest imaginable color range, ease and low cost of application, etc., etc. Our engineers will gladly analyze your problems and work up sample sheathings without obligation. Write

CELLULOID CORPORATION

ESTABLISHED 1872

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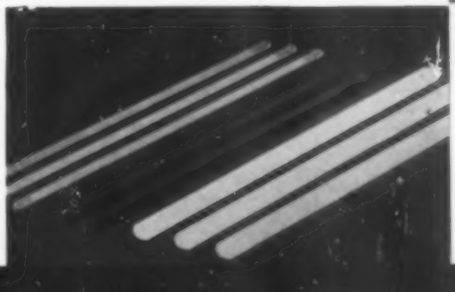
Celluloid sheaths are rapidly becoming standard equipment on all steel-shafted golf clubs. Easily cleaned, they won't scratch. More important, they eliminate rusting and oiling.

Metals that come into contact with the body—as in corset stays—Celluloid provides the one ideal means of preventing rust, staining and rapid deterioration.



The Subtlety of Nature

How deftly she blends the beauty of form with captivating color. How cunningly she courts attention. How successfully she gains her end . . . Dame Nature has an able imitator in the charm of molded Resinox. Her flowers are fashioned to lure the bees. Your package — molded of Resinox — will lure buyers. There is a Resinox molding material for every packaging need.

RESINOX

MOULDING RESINS MOULDING COMPOUNDS
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A PERFECT LANDING

Through its reliability in radio and electrical equipment, Synthane contributes a vital part to the safety of night flying. You can secure this same reliable performance in *your* products if you use the same dependable insulation—Synthane laminated bakelite.

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SHEETS • RODS • TUBES
FABRICATED PARTS

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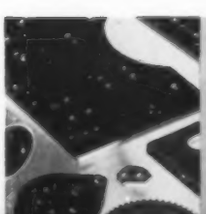
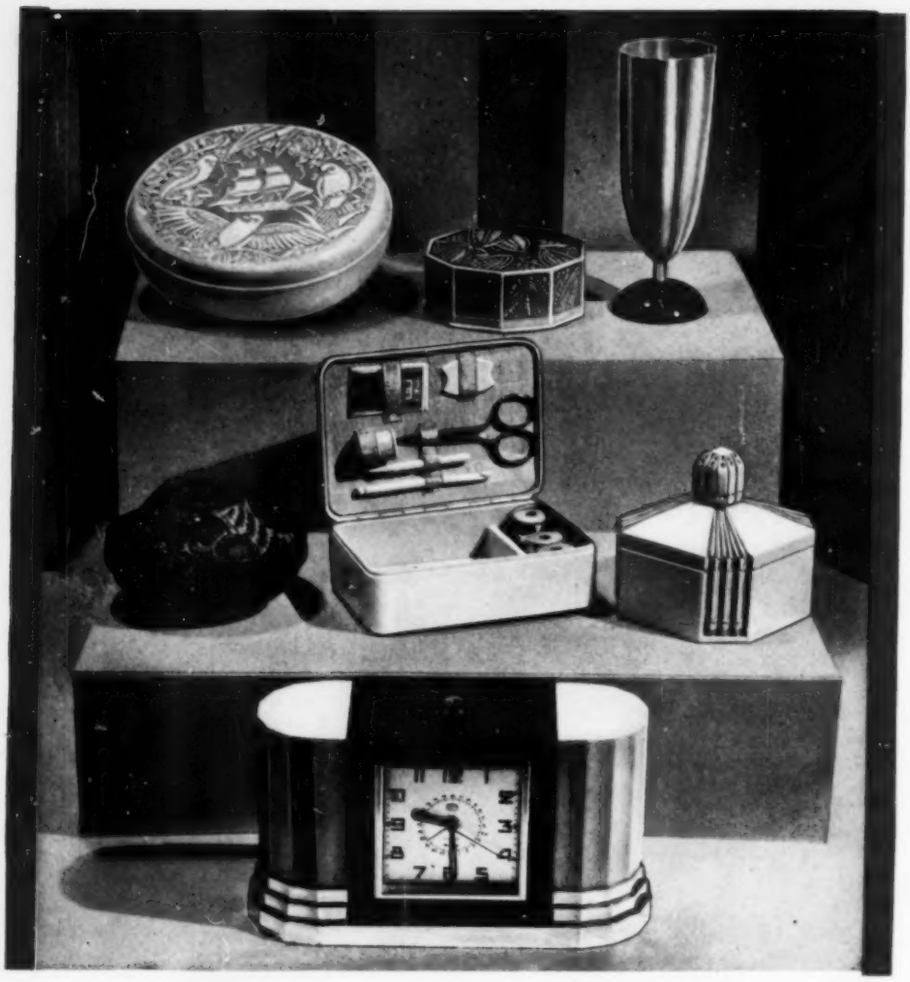


SYNTHANE
CORPORATION OAKS · PENNA



(All items shown were molded abroad.)

The Whole Wide World is doing things with "BEETLE"

No matter what your molding problem, someone, somewhere, has probably solved it already with "Beetle" Molding Powder . . . And the benefit of this world-wide experience can be yours, if you'll call in the "Beetleware" representative.

"Beetleware" is the *one and only* light-colored molding material molded both here and abroad. It's the *original* colorful molding material, shatter-proof, water-proof, odorless. It's the *one* molding material whose name puts an extra sales value on the products made from it.

Our Creative Design Service will gladly show you stock molds as well as specimens of domestic and foreign items by the world's foremost designers. Or, if you wish, we'll execute your own idea. Let's talk it over.

"Beetleware"

BEETLEWARE DIVISION of American Cyanamid Company
30 Rockefeller Plaza, New York City

Now—they're housed in

AKELITE MOLDED

EAT MINCING took a long forward step when the motor-driven opper displaced a pair of cleavers wielded by a skilled and brawny-med butcher. Now the familiar old pedestal type meat chopper th exposed motor, bearing oilers, drive, and switch, makes way for e modern machine with all of these parts hidden from view within Bakelite Molded housing.

Modern materials, as well as modern product designing, are re-onsible for this finer, handsomer Hobart Chopper. Cutting knives e of stainless steel; bright parts of gleaming chromium plate; and e housing itself is of permanently lustrous Bakelite Molded. This aterial is ideal for the purpose as it cannot corrode, is unharmed grease or moisture and is quickly wiped clean with a damp cloth. e color is in the material and will not rub off nor peel.

This is a particularly interesting example of the possibilities of kelite Molded because of the large size of two sections forming e molded housing. Each half is formed in a deep cavity mold in e press operation, is accurate in dimension and has a smooth strous surface. No machining, polishing, or plating is required.

Manufacturers of appliances and devices of all kinds have found Bakelite Molded a material that makes modern redesigning econ-mically practical, and at the same time makes products more sale-ble through improved appearance. We invite you to consult us about e advantages of Bakelite Molded for your own products, and also write for a copy of illustrated Booklets 22M, "Bakelite Molded", 2L, "Bakelite Laminated", 22H, "Bakelite Cast Resinoids", and 22R, Versatile Service of Bakelite Resinoids".

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ne Index with case
ds of Bakelite Molded

Air Conditioner with panel-ing of Bakelite Laminated

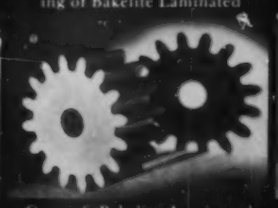
Bakelite Molded Ignition Coil and Distributor Head

Midget Radio Receiver in a case of Bakelite Molded

Kitchen Utensils with handles of Bakelite Molded

Bar, paneled with metal-inlaid Bakelite Laminated

jewelry, in colors, of
elite Cast Resinoid


Gear of Bakelite Laminated used on industrial machinery

Impact Bakelite Molded valve assembly, for oil well drilling

This camera case is made entirely of Bakelite Molded

Facial Cream Jar & with caps of Bakelite Molded

Fishing Reel made complete of Bakelite Molded

BAKELITE

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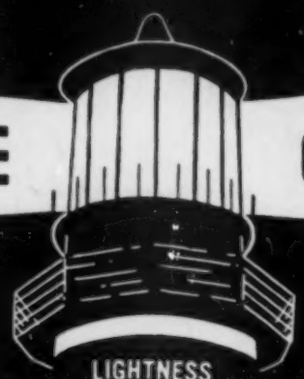
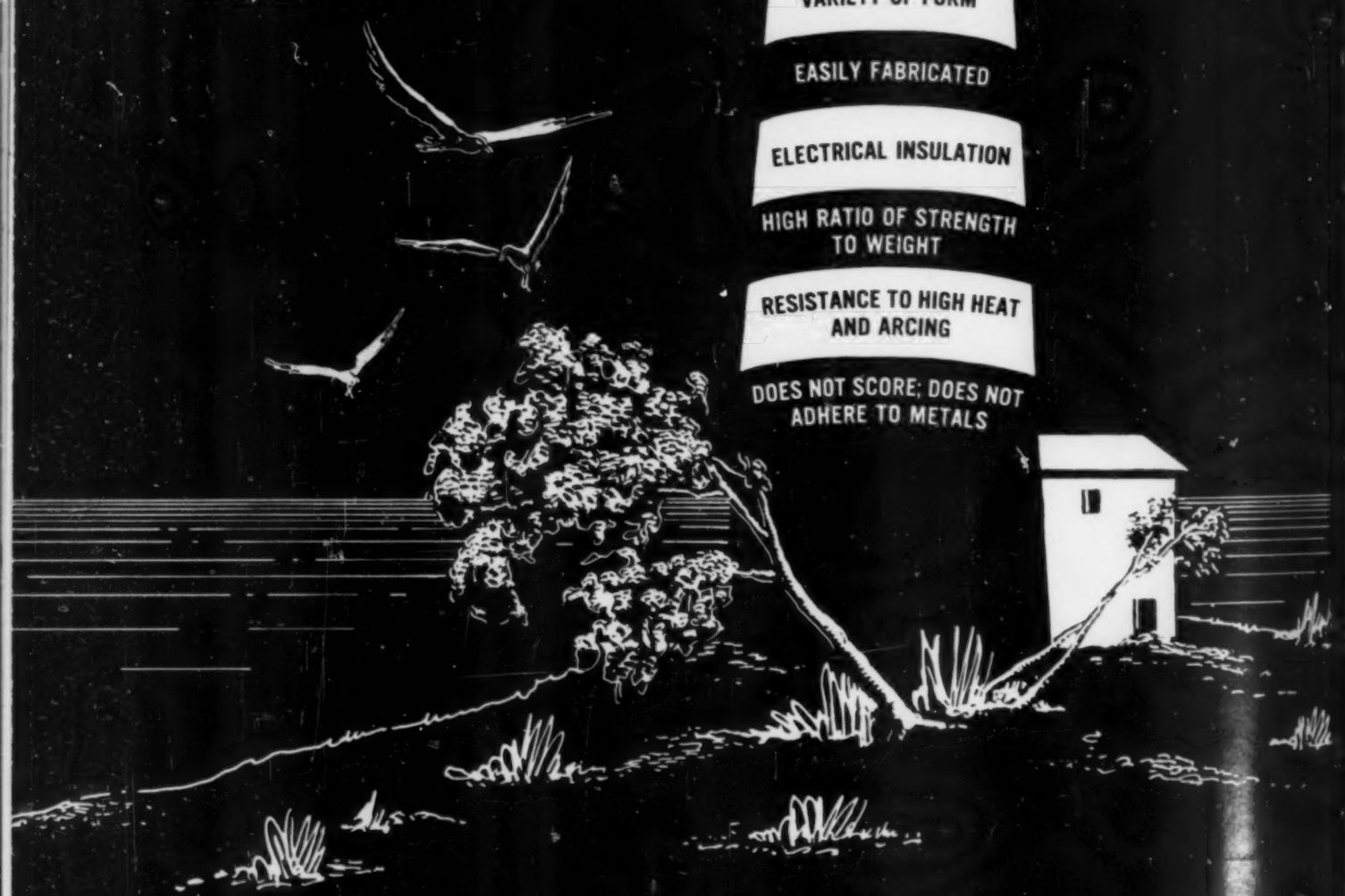
Take advantage of the many combinations of properties offered by the various grades of Textolite and Cetec. There is a grade just right for your product's special requirements. For information concerning the adaptability of Textolite to your products, write to Plastics Department, General Electric Company, West Lynn, Mass.



- LIGHTNESS
- RESILIENCE
- DECORATIVE
- LOW HEAT CONDUCTIVITY
- UNIFORMITY OF STRUCTURE
- RESISTANCE TO CORROSION
- PERMANENCE OF PROPERTIES
- VARIETY OF FORM
- EASILY FABRICATED
- ELECTRICAL INSULATION
- HIGH RATIO OF STRENGTH TO WEIGHT
- RESISTANCE TO HIGH HEAT AND ARCING
- DOES NOT SCORE; DOES NOT ADHERE TO METALS



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